

SUMMARY

The exhibit is divided into three sections,

Chapters A-B: History of science

C: Description of phenomena

D -E: Evolution of knowledge and study of the effects

General tour:

The written history of Meteorology begins 4000 years ago, in Mesopotamia, in the form of wedge-shaped plates, which record celestial omens (points) that are considered to come from the gods and are important for political, military and agricultural affairs e.g. "If the moon is surrounded by halo and Sirius stands inside it, the Tigris and the Euphrates will be filled with mud" (pp. 2-4). In the course of time the management of weather phenomena passes to the arsenal of the gods, e.g. lightning is the case of the most powerful god (pp. 5-9). This privilege of the gods will be challenged by philosophers (pp. 10 - 12) and weather phenomena will be studied and described by Aristotle in the 4th century BC. in his book "Meteorological". This book was a textbook of meteorology for all of Europe and the whole known world until the 16th century, without question, and substantial completion, and gave the name of science as "Meteorology". Advances in technology and science lead to interpretations and measurements of weather phenomena e.g. Galileo and thermometer (pp.14 - 28) with a special aim of forecasting the weather. The latest development in this field is the 'chaos theory' by E. Lorenz (p. 28). Consequently, describes the knowledge of the atmosphere today (p. 29 - 59) and the dangers that threaten humanity from climate change and the abuse of the environment by human activities (pp. 60-72). It ends with the description of the effect of the weather in everyday life (pp.73 - 79).

Comments on the philatelic material:

The exhibit contains almost all the philatelic chapters. I mention the most important.

- Fancy p. 2.
- Perfin p. 68 and p. 70 (triple)
- Telegrams
- Series of 'postal stationeries' published in: Portugal, Greece, Romania, Mexico, Mozambique, India, Germany, China, Publibel.
- Propaganda cards: Germany, USSR. Censored war postcards
- Meter.
- Folder Mail with advertisement
- 'Too Late' postal stamp and analysis, p74
- Airgraph.
- Reply coupon p.70.
- Special commemorative stamps of research missions. Letters by mail on board a scientific mission.
- Endless seals, Remarkable letters e.g. Armee d Orient 1855 from the campaign in the Crimea, after the destruction of the fleet by a storm page 17. Interesting envelopes posted with difficult bands of stamps p.6
- Mulready p. 80
- Stamps depicting works by great painter e.g. E. Munch were included (Scream p.67, Sun p.68)
- Mirror print in excellent print p. 5.
- Printing and perforation errors, e.g. p. 9

METEOROLOGY (A Greek science...)

Meteorology takes its name from the treatise of the philosopher Aristotle (384-322 BC), "Meteorological", which means a discussion of meteorological phenomena. Today it is a branch of atmospheric science that includes atmospheric chemistry and physics, with a focus mainly on weather forecasting.

This exhibit presents:

- The passage of meteorology from the beliefs of Babylonians to ancient Greece, and the theocratic environment of the time.
- The classification of weather observations in the scientific sphere by Greek philosophers.
- The development over the centuries of scientific Meteorology, in knowledge and tools.
- The investigation of phenomena, and finally their impact on today's life.

EXHIBITION PLAN

A. METEOROLOGY AND MYTHOLOGY	Pages 2 to 9
a. Belief	2 - 4
b. Theocracy	5 - 9
B. THE SCIENTIFIC DEVELOPMENT OF METEOROLOGICAL KNOWLEDGE	10 to 19
a. Leaders	10 - 19
C. METEOR AND MEASUREMENTS	20 to 45
a. Instruments	20-28
b. Phenomena	29 - 45
D. PHYSICAL CONDITION OF THE ATMOSPHERE	46 to 59
a. Seasons	46-51
b. Climate.....	52 - 59
E. ENVIRONMENT	60 to 79
a. Human Influence.....	60 - 67
b. Energy Protection.....	68 - 72
c. Effect on Everyday Life.....	73 - 79
EPILOG	80

Description of outlines and texts

Normal Items

Important Items

Thematic text / *Philatelic text* / Important text

Bibliography

- | | |
|--|--|
| 1. N.W. Kyriazopoulos: General Meteorology Lessons | 5. P. Leoussis: Handbook of thematic philately |
| 2. W.K. Widger: Meteorological Satellites | 6. Internet |
| 3. Liba Taub: Ancient Meteorology. | 7. Newspapers |
| 4. Catalogs: Vlastos, Hermes, Yvert et Tellier | |

A. METEOROLOGY AND MYTHOLOGY

α. BELIEF

The Starry Sky in Antiquity. First Written Information

Stars and celestial bodies were used by various civilizations to predict the weather. Babylonians in second millennium B.C. record in cuneiform, great omens series, considered points sent by the Gods.



Babylonians, observing the sky,
recorded meteorological omens...



As striking stars that were
important elements of reports and
observations.



A comet was bad omen...



The color of the sky in the East and
West of the Sun was an ideal sign for
weather forecast.



Starry sky.

1929. US Postal stationery, stamped by fancy stars. Recommended by
Appleton Wisconsin to address within the same city.

Astronomy - Zodiac

Ancient Greek and Roman writers described in form of poems the influences in weather, by the planets, the passage of the Sun through the zodiac, the comets and other astronomical phenomena.



The planetary system with the known planets in antiquity Mercury, Venus, Earth, Mars, Jupiter, Saturn.



According to Claudio Ptolemeo, the shape of the meniscus or the width of the moon provided a weather prediction.



A. METEOROLOGY AND MYTHOLOGY

α. BELIEF

Observing Plant and Animal Behavior.

The Latins, Aratus (3 cen. B.C.) in his work of "phenomenon" and Virgil (1 cen. B.C.) in "agricultural", say that animals and plants provide many signs of weather forecasting.



A bull licking his front leg shows rain or storm (Virgil, About the Weather).

1902 Ceramic Athens, postal stationery 10l, mailed from Athens to Innsbruck.



Leaves swirling the air and falling in the surface of the water, it signs of an upcoming bad weather (Virgil)



The behavior of birds, migratory birds, on sea or land, shows signs of bad weather or rising rain.

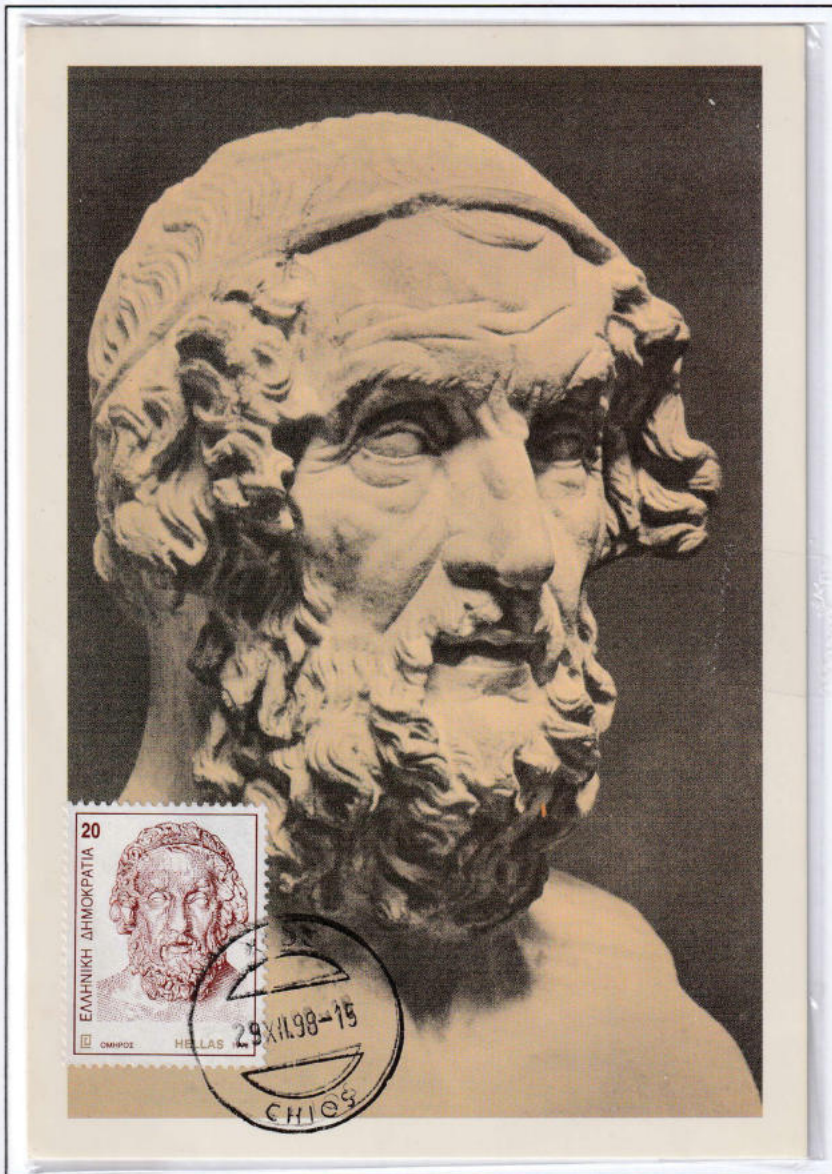


The movements and paths of the ants are element of weather forecasting. Envelope FDC 1965 from Greece to Vatican, registered

A. METEOROLOGY AND MYTHOLOGY

Homer's Epics

The oldest surviving Greek texts, the epics of Homer, show that meteorological phenomena have traditionally been associated with the gods, and were often perceived as their manifestations. Odysseus' return trip is a ten-year battle with the elements of nature, against angry god Neptune who sends a north wind to eliminate him and ally goddess Athena and god Aeolos, leaving only wind Zephyrus free to lead him to Ithaca Island.



Odysseus



God Neptune

"With that he [Poseidon] rammed the clouds together—both hands clutching his trident—churned the waves into chaos, whipping all the gales from every quarter, shrouding over in thunderheads the earth and sea at once—and night swept down from the sky—East and South Winds clashed and the raging West and North, sprung from the heavens, roiled heaving breakers up—and Odysseus' knees quaked, his spirit too"

The Odyssey V. 321-327



North wind

Poet Homer was born in Chios Island in the 8th century BC.

CM Homer, Chios postal stamp.



Zephyrus, western wind

Goddess Athena in rhapsody Odyssey V. 382-85 sends a windy wind (Zephyrus) to lead Odysseus. 1953. Decalquee style



A. METEOROLOGY AND MYTHOLOGY

b. THEOCRACY

Atmospheric phenomena of superhuman power and impressive extent arouse the admiration and awe of the first peoples and are therefore imposed as objects of worship. Ancient Greek mythology, which eminently deified natural phenomena, did not fail to divide the meteorological ones, among the various gods, depending on their power. **The geographical boundaries of Greek mythology extend to the whole known world at that time, and its various themes are usually adapted to the climatic characters of the area considered.**

Jupiter (Zeus)

The most powerful of the Greek pantheon, Zeus, is represented by lightning. He has gathered the most imposing and frightening of the atmospheric elements, to impose it on gods and humans.



Bronze statuette of Zeus, from Dodona in Epirus, in the act of hurling a thunderbolt.



'Zeus Lightning' as emblem of the International Meteorological Organization (IMO)



1972 "Zeus lightning" Detail of the bronze statue from Dodona oracle in Epirus. Envelope mailed from Greece to USA (duty of letter 20gr+airline+express special delivery= 18,5drx.).

Strip of three stamps, on envelope, is the only one that I have seen, due to the issued quantity, printing method (strip of 10), and big value.

A. METEOROLOGY AND MYTHOLOGY

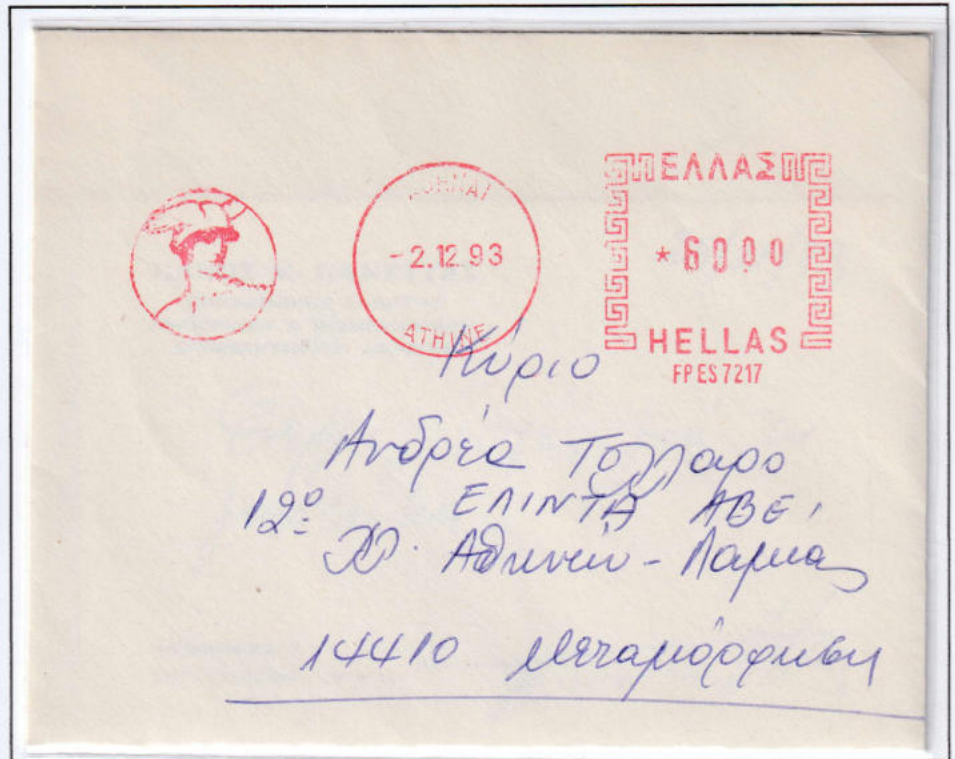
b. GREEK GODS

Hermes - Phaethon - Apollo

The Homeric name of Hermes: Argeiphantis (the one who cleans the sky from the clouds and shows the bright light).
Phoebus Apollo is the god of light. Phaethon, son of the sun, is the young driver of the sun's chariot.



Head of Hermes and Phoebus Apollo
Perforation variety



Meter Hermes, on cover of Chamber of Commerce



Excessive solar radiation in the summer period is attributed to a deviation from the natural trajectory of the hot chariot under the careless guidance by Phaethon.

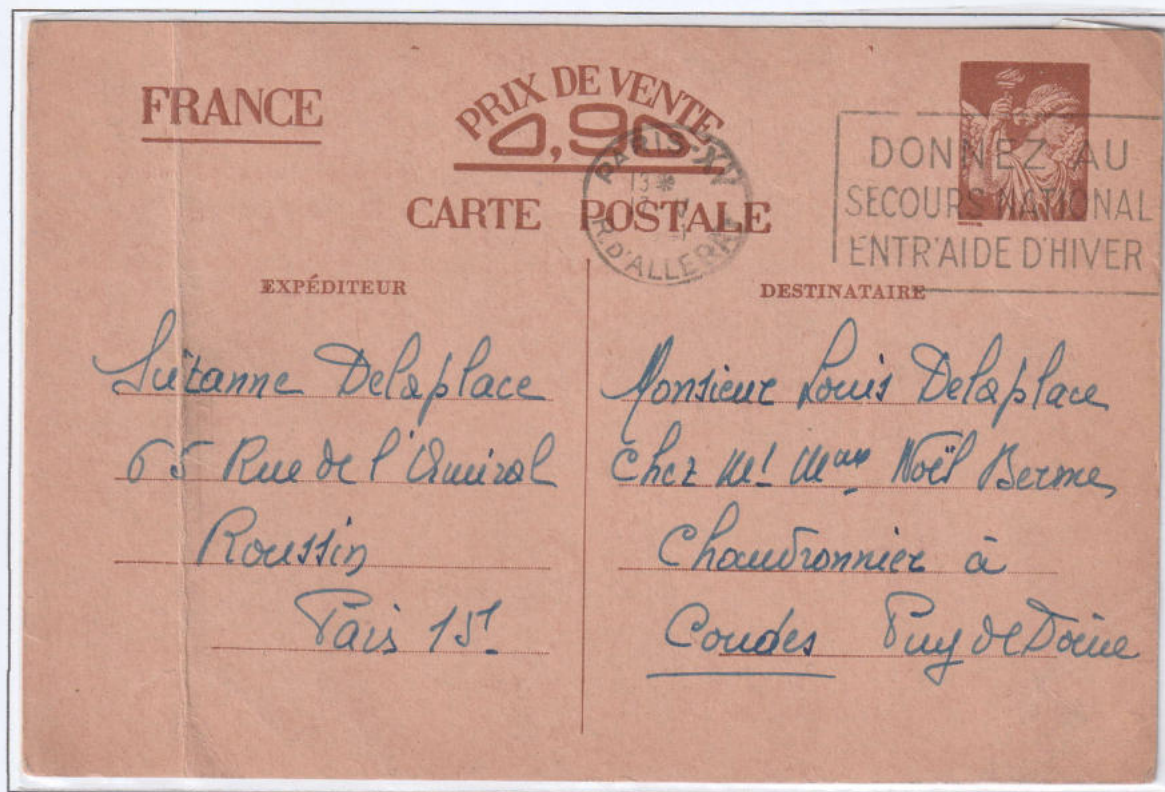
Airmail cover, Athens to Berlin. Phaeton edition 1935. Duty: abroad charge 8 dr + airpost 7 dr

A. METEOROLOGY AND MYTHOLOGY

b. GREEK GODS

Iris

Besides the Olympian gods, a whole gradient of secondary mythological beings, under the control of which, were devised all the meteorological phenomena and external weather traits. These include the bright Iris, representing the well-known visual phenomenon (rainbow).



1938 Cover, Athens - Prague. Iris in four pcs of two drachmas. Fees: 8drs + reg.12drs + social care fee 1dr. = 21drs. total

A. METEOROLOGY AND MYTHOLOGY

Aeolus and Winds

Aiolos (Aeolus) was the divine keeper of the winds and king of the mythical, floating island of Aiolia (Aeolis). He kept the Storm-Winds locked safely away inside the cavernous interior of his isle, releasing them only at the command of greater to wreak devastation upon the world.



British booklet, with an octagonal building in Ireland, called the "temple of wind". Influenced by the temple of Aeolus.



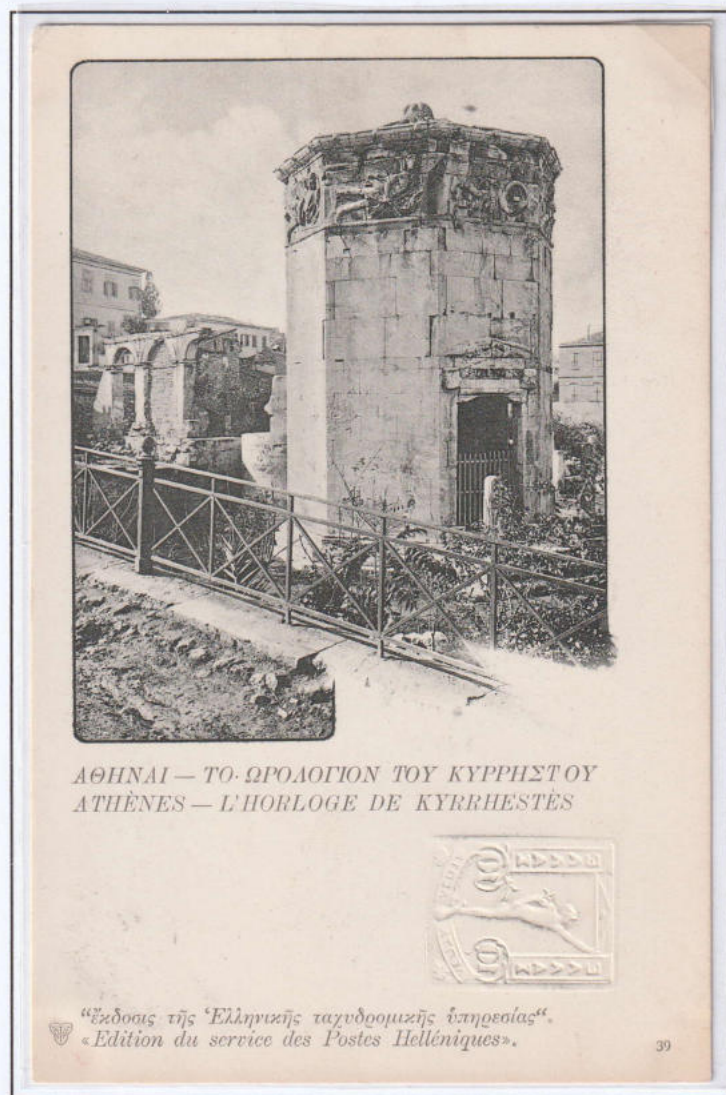
Stromboli Island.(Aiolis)



According to a legend the palace of Aeolus was located on the mountain Tsiknias in Tinos



Aeolus invented the sails of the ships.



Postal Stationery 10 I. Monument of the Winds, (Clock of Cyrestos) in Athens. The main winds are identified there. It is an emblem of Britain's royal meteorological company.



Detail of the monument. The north-east wind. 1943, Set of four, unperforated, printing on the gum.

Asclepius - Hippocrates.

The first systematized meteoric-climatic knowledge and the thermal psychological influence of nature in man, arrived in Greece from Asia through the priests of Asclepius. Asclepius were built considering the meteorological conditions of the place. Hippocrates' Treatise, father of medicine, "Air, Water, Places", is a manual of Medical Climatology.



Bust of Asclepius



Ophis, the sacred animal of Asclepius



Registered cover from post office 'Sanctuary of Asclepius'. Commemorative postmark of Epidaurus festival.

Hippocrates, statue in Kos
1947 Imperforate pair

The plane tree in whose shadow Hippocrates taught in Kos

Hippocrates, crowned by muse Cleo
Envelope mailed from Kos to Athens 4.9.1960 with commemorative stamp.

Democritos - Heraclitos

Democritos, a philosopher from Avdira of Thrace, and Heraclitos from Ephesos, attempted to explain materialistically the nature and physical phenomena. Many consider Democritos to be the "father of modern science"



Physical phenomena

Democritos



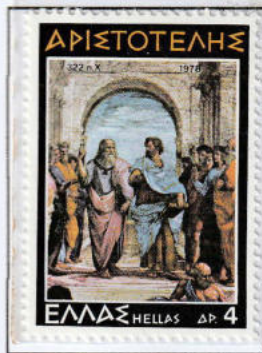
Heraclitos



Personal stamp, issued by the research center "DEMOCRITOS"

Aristotle

His characteristic work in the field of natural sciences is "Meteorological" (from which named this science), describing the phenomena and the external traits of the weather. It deals with the characteristics of atmospheric air (temperature, humidity, etc.) and provides scientific interpretation according to the knowledge of the time, rejecting theocratic interpretations.



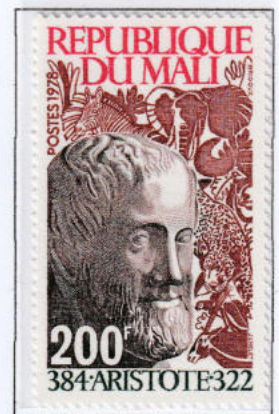
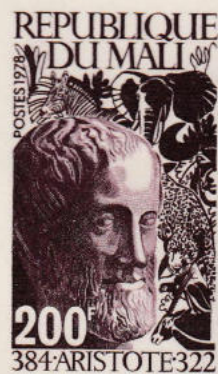
Aristotle and his teacher, Plato. A fresco painting by Raphael in the Vatican



Commemorative stamp of international weather day



Medieval depiction of the fresco in St. George Negades



1978 Essay in sepia color, signed by artist JUMELET, (Epreuve d atelier), and final printing

B. SCIENTIFIC DEVELOPMENT OF METEOROLOGICAL KNOWLEDGE

α. LEADERS

Before Galileo.



Aristotle's views on meteorology have prevailed for many centuries without any substantial development, until Galileo (1564-1642) and his students, when discovering fundamental properties of atmospheric air and inventing the first meteorological instruments.



Al Dinawari (Arabian), wrote in the 9th century the 'Book of Plants' which deals with the application of meteorology in agriculture as well as meteorological phenomena.

Claudius Ptolemy (100-168) studied properties of light in atmosphere, including reflection, refraction, and color. as part of his astronomical observations.
2009 Postal stationery China, 80c.



Johannes Kepler 1611 wrote the first scientific study on the snow crystals

B. SCIENTIFIC DEVELOPMENT OF METEOROLOGICAL KNOWLEDGE α. LEADERS

After Galileo

At this period invented the first meteorological instruments and released the first measurements.



Celsius (1701 - 1744)
Swedish astronomer. He proposed the temperature measurement scale.

Galileo Galilei. Commemorative postal stamp for the four hundred years since his birth. Inventor of the thermoscope (thermometer precursor). Inserts the quantitative measurement.



1982 meter of a German thermometer manufacturing plant



Fahrenheit, 300 years after application of the homonymous temperature measurement scale.



Blaise Pascal, 1648 discovered that the atmospheric pressure is decreasing by height, concluding that there is a vacuum above the atmosphere.



Barometer



FDC 1958, Torricelli (1606-1647). Discover the atmospheric pressure. The consequence was the creation of the barometer, an instrument that measures atmospheric pressure, providing information about the upcoming weather.

B. SCIENTIFIC DEVELOPMENT OF METEOROLOGICAL KNOWLEDGE α. LEADERS

Goethe - Otto von Guerike

Of the most prominent personalities of international intellectuals engaged in politics and promoted scientific meteorology, Goethe set up a network of meteorological stations in the Weimar Duchy, and wrote a meteorological essay, von Guerike, known from the Magdeburg experiment, developed the barometer, the first scientific weather forecast



Otto von Guerike, in meter at a cover of University of Magdeburg



The Magdeburg experiment



Statue of von Guerike at the university



Goethe has occupied himself a good deal with meteorology; barometer readings interested him particularly. The main thing is that he gives a comparative table of barometric readings at Weimar, Jena, London, Boston, Vienna, Töpel

B. SCIENTIFIC DEVELOPMENT OF METEOROLOGICAL KNOWLEDGE α. LEADERS

Benjamin Franklin

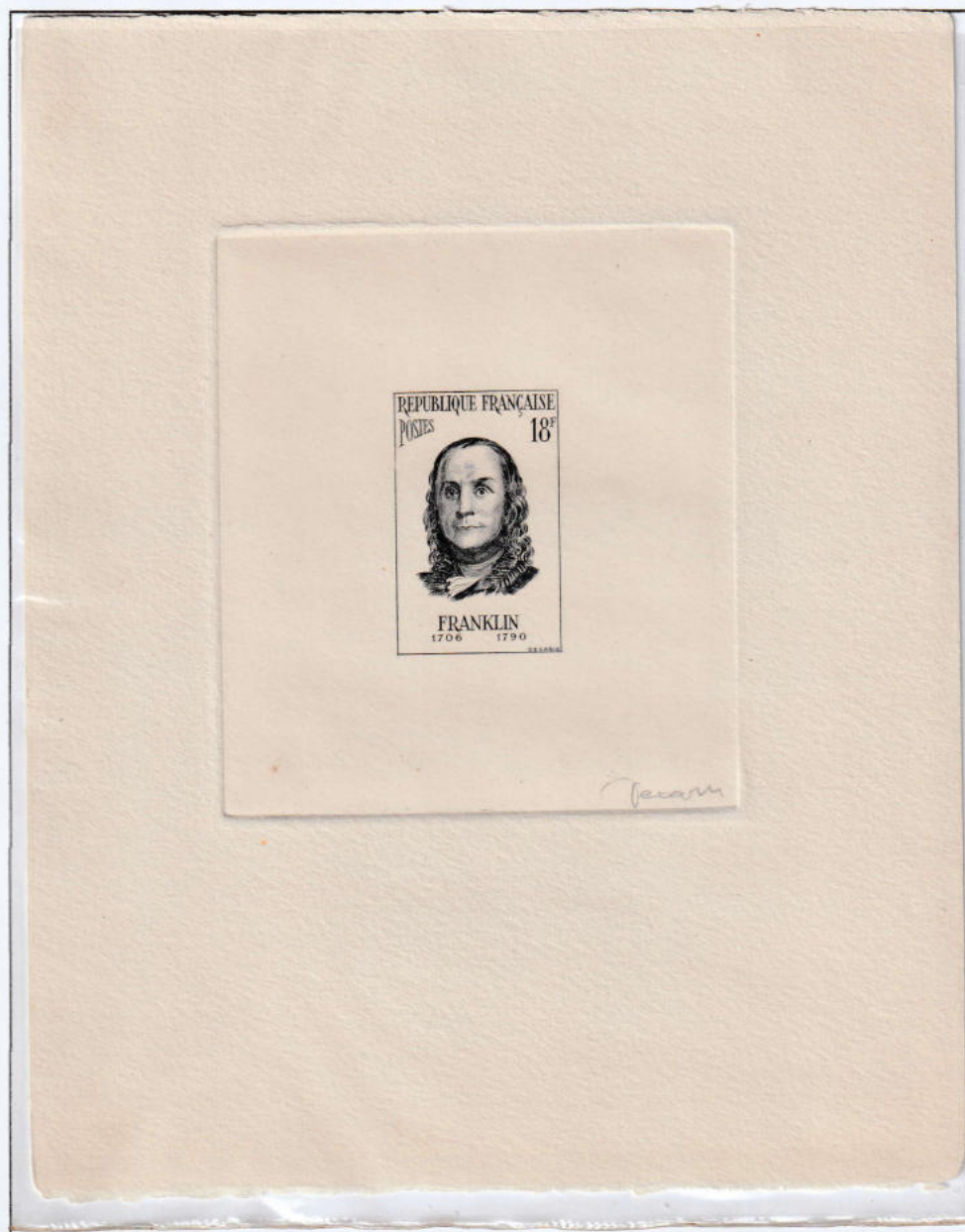
Franklin was a leading author, printer, political theorist, politician, freemason, postmaster, scientist, inventor, humorist, civic activist, statesman, and diplomat. As a scientist, he was a major figure in the American Enlightenment and the history of physics for his discoveries and theories regarding electricity. As an inventor, he is known for the lightning rod, bifocals, and the Franklin stove, among other inventions.



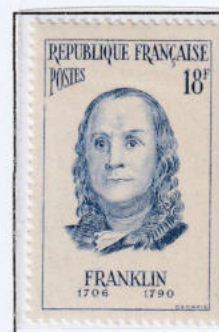
Franklin published a proposal for an experiment to prove that lightning is electricity by flying a kite in a storm that appeared capable of becoming a lightning storm. Franklin's electrical experiments led to his invention of the lightning rod.



1925 US. B. Franklin on 1c bisect stamp



As deputy postmaster, Franklin became interested in the North Atlantic Ocean circulation patterns. Franklin worked with experienced ship captains, learning enough to chart the current and name it the Gulf Stream, by which it is still known today.



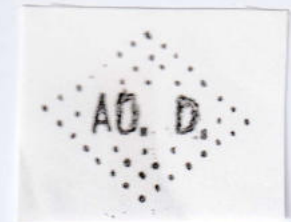
1958 Artist's essay in black "épreuves d'artiste", signed by the engraver Decaris, and final version

B. SCIENTIFIC DEVELOPMENT OF METEOROLOGICAL KNOWLEDGE

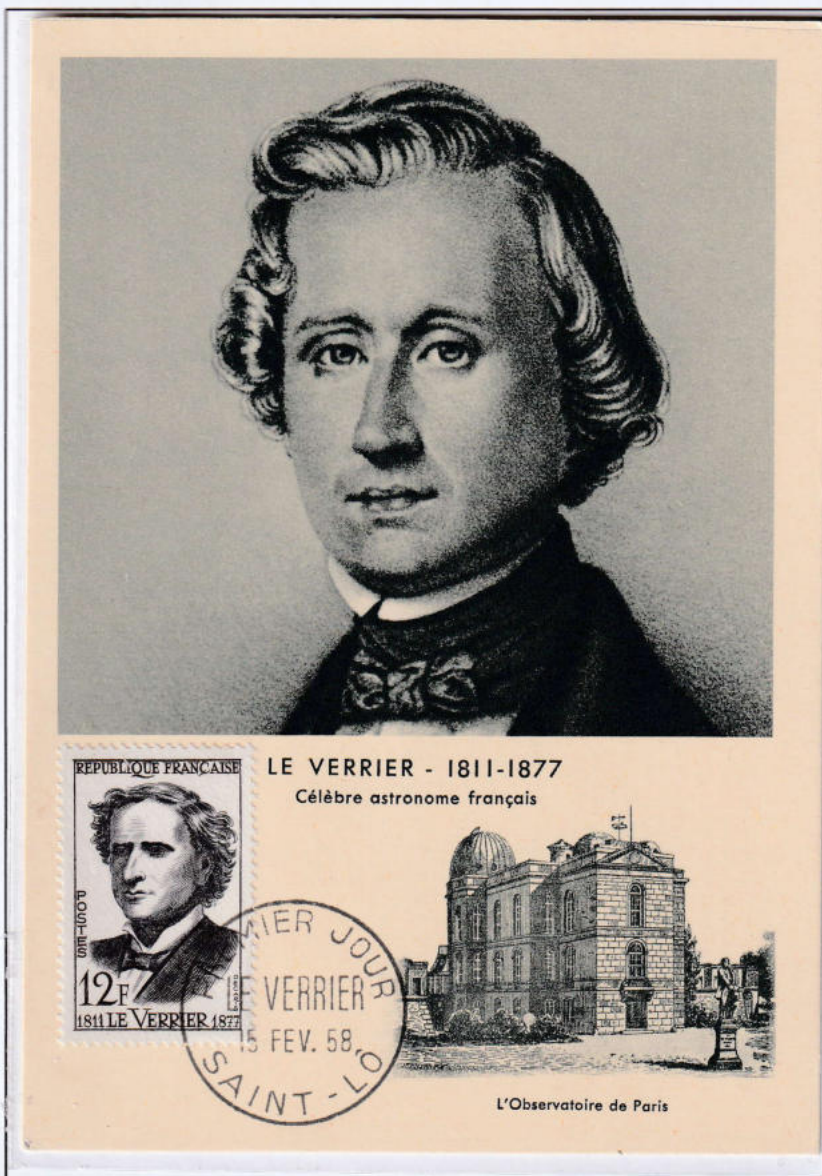
α. LEADERS

Le Verrier

Napoleon III ordered the astronomer and president of Paris Observatory, Le Verrier, to investigate the conditions under which the French fleet in the Crimea (1853-1855) suffered severe damage from a sudden cyclone, and the possibility of weather forecasts in the future. He was the founder of the networks of meteorological stations and services in Europe.



1855 Letter from Sevastopol Crimea 31. 3. 55 to Paris, arrival 13. 4. 55. Cancellation "AO. D", on the France postage stamp, No 14 (Napoleon III). Cancellation, "ARMEE D ORIENT office D", by the expeditionary army in Crimea,



France's warship during the campaign period in Crimea

Le Verrier, was one of the founders of modern meteorology. In 1854 the minister of war requested him to study the cyclone that struck the fleets besieging Sevastopol. His systematic inquiry in Europe and Asia enabled him to determine the path of the cyclone. Occupied during this period with the reorganization of the meteorological observation service of the Paris observatory, Le Verrier conceived "the project of a vast meteorological network designed to warn sailors of approaching storms." The greatest difficulty lay in securing the cooperation of the various telegraphic services. By 1857 the project was sufficiently advanced for distribution of a daily bulletin giving the atmospheric conditions at fourteen French and five foreign stations.

C.M. Le Verrier and the Paris Observatory. He discovered the planet Poseidon. Creator of modern meteorology.

23 March 1961 Commemorating the Founding of WMO.

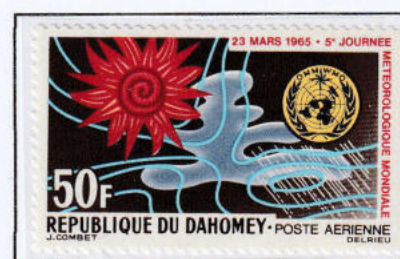
The World Meteorological Organization (WMO) was founded in 1950 and is one of the most specialized UN organizations. It is based in Geneva and has members almost every country in the world. Since 1961 it has been celebrated as a world day of meteorology.



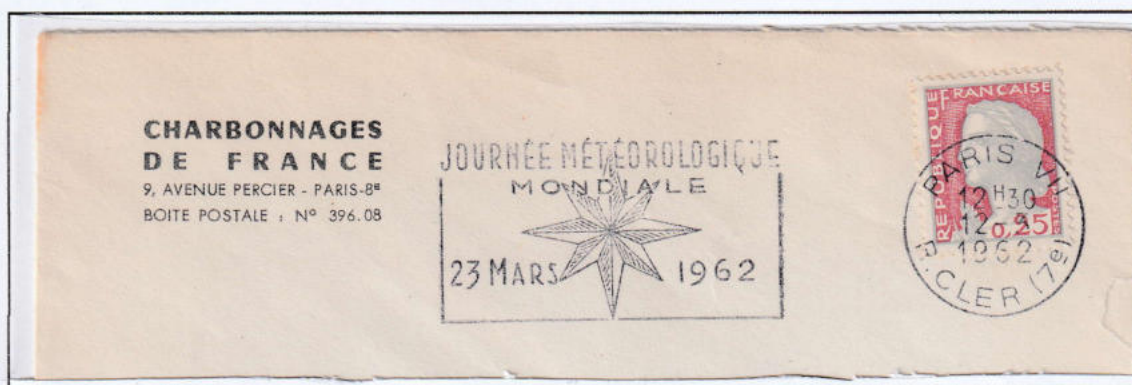
1985, 15th celebration



1969, 9th celebration



1965, 5th celebration



1962, 2nd celebration



1961 Upper Volta. Issue for the first World Day of Meteorology celebration.
 Essay (epreuves d'atelier), signed by Decaris engraver, in sepia color, and final print.

B. SCIENTIFIC DEVELOPMENT OF METEOROLOGICAL KNOWLEDGE

α. LEADERS

20th Century. Globalization, Explosion of Meteorological Knowledge.

The development of telecommunications, globalization in information circulation, satellites have helped to improve meteorological forecasts through the rapid transmission of memories necessary for global aviation, navigation, agriculture, commerce, tourism, and the conduct of military operations



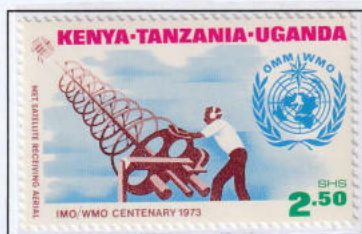
1940 Telegram from India to Malaysia of the Eastern Australasia and China telegram company, covering almost all the earth, with the routes as shown on the telegram map.



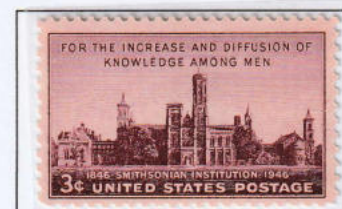
The development of telecommunications essentially starts from the discovery of the telegraph



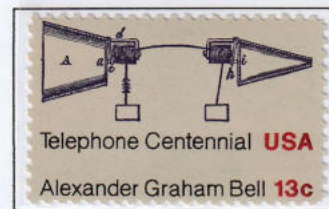
Telecommunication satellite



Satellite receiving aerial



Smithsonian Institution established a weather observation network across US starting 1849



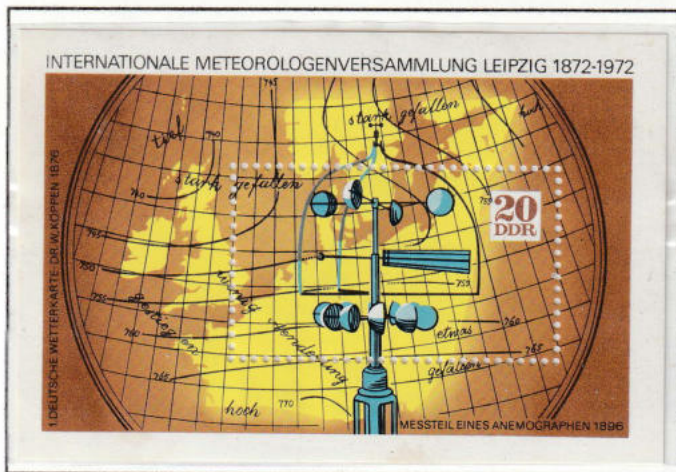
The first phone of Graham bell
Normal printing and vertical shift

C. METEOR AND MEASUREMENTS

α. INSTRUMENTS

Vane - Anemometers - Windsock

Identify and record, wind speed and direction. Previously, the vane were decorative elements on the roofs of the buildings.



Anemograph an instrument for recording the velocity and direction of the wind.



Windsocks typically are used at airports to indicate the direction and strength of the wind to pilots and at chemical plants where there is risk of gaseous leakage.



Vane on the roof of a temple.
1944, Portuguese stationery \$80



An anemometer is a device used for measuring wind speed,



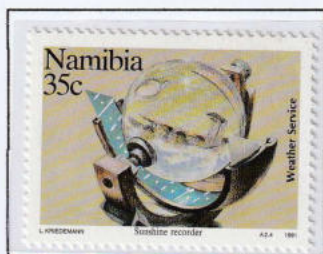
Decorative vane on the building roof

Scientific Instruments

Meteorology uses scientific instruments to measure the different physical sizes and their variations



Thermometer



Illuminator, counts sunshine in one place



Rainfall meter



Radiometer, measures the direct, indirect, and total sunlight



Aneroid Barometer

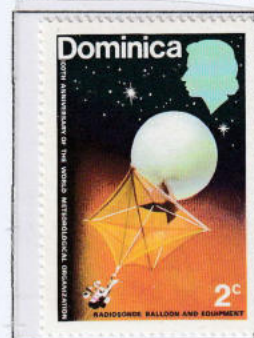


B. Haley

1964 Barograph, an instrument that measures and records atmospheric pressure and its changes.
Artist's essay (epreuves d'artiste), C. Haley signature, essais de couleur, final version

Meteorological Balloons

Balloons for meteorological purposes began to be used in the 19th century. It is a balloon (specifically a type of high-altitude balloon) that carries instruments, radiosonde, aloft to send back information on atmospheric pressure, temperature, humidity and wind speed by means of a small, expendable measuring device called a radiosonde.



Meteorological balloons of various types

Radiosonde is a battery-powered telemetry instrument carried into the atmosphere usually by a weather balloon



Photocopy 80%, back side

24/10/38 The Star of Poland - the largest re-usable stratospheric balloon in the world, was designed and built in Poland in 1938 by the WBS in Legionowo.

Meteorological Satellites

The simultaneous observation on a wide scale of cloud formations and atmospheric disturbances is now done with satellites or missiles. The meteorological satellites are American (TIROS, NIBUS) or Russian (INTERCOSMOS) or European (ESA). These Programme began around 1960.

US Space Meteorological Program



Launch TIROS



NIMBUS Satellite



TIROS satellite in flight

European Satellite Program ESA



Commemorative edition for the ESA European Satellite Weather Program

Russian Satellite Program



Commemorative day for the cosmonaut and meteorological satellite program 'Meteor'
1975 Russian postal stationery 6kop,

Stevenson Screen

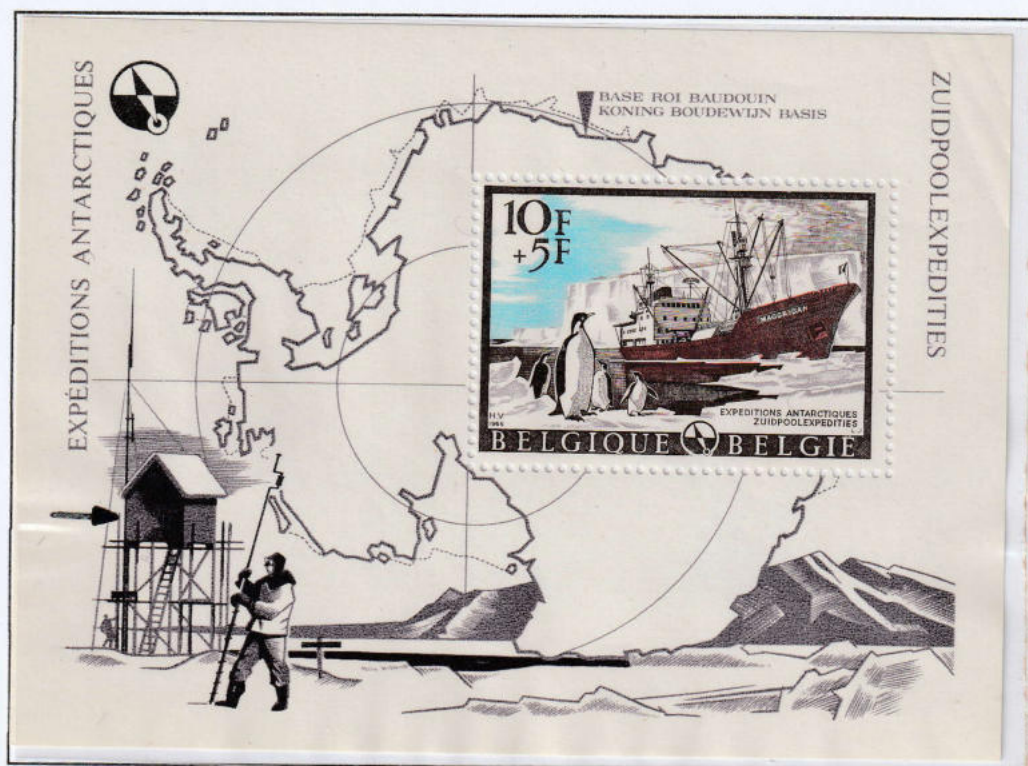
Or instrument shelter, is a shelter or an enclosure to shield meteorological instruments against precipitation and direct heat radiation from outside sources, while still allowing air to circulate freely around them. It forms part of a standard weather station.



It is kept 1.25m above the ground.



Automated Metering Stations
are connected by sensors,
with a central brain.



There are stations that have been built in a peculiar way to serve local needs or conditions, with appropriate modifications

Floating Stations

Appropriately shaped ships are used for meteorological scientific missions and measurements in the air and sea.



Cover mailed from meteorological base DAVIS, 5 Nov 93 and traveled by the Aurora Australis scientific polar boat. (red tag).
Insert stamp appearing the boat Aurora Australis.

C. METEOR AND MEASUREMENTS

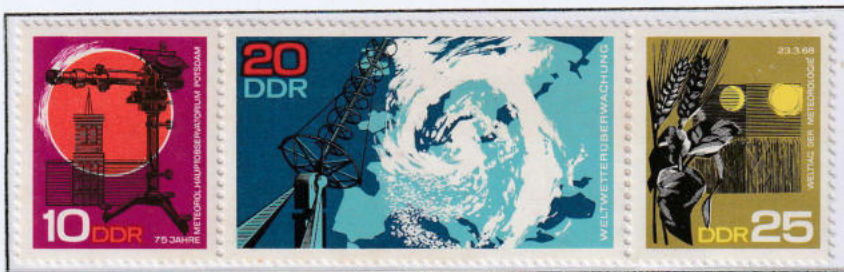
α. INSTRUMENTS

Meteorological Stations

A meteorological (weather) station is a facility, either on land or sea, with instruments and equipment for measuring atmospheric conditions to provide information for weather forecasts and to study the weather and climate. The measurements taken include temperature, atmospheric pressure, humidity, wind speed, wind direction, and precipitation amount.



1907 Mozambique postal stationery 20r, meteorological observatory in Beira, second largest city of the country



Edition for the 75 years of Potsdam station. Radiometer, weather satellite image, climate impact in agriculture.



National Observatory of Athens founded in 1846 and since 1890 it functioned as a research meteorological station. 1901 Stationery 10l (use for abroad) traveling from Athens to Havana, via New York.

C. METEOR AND MEASUREMENTS

α. INSTRUMENTS

Polar Stations, North Pole (Arctic) - Southern (Antarctic)

The scientific stations in the Polar Regions are governed by international agreements regarding their operation. One of their main destinations is meteorological and environmental observations. The Arctic is defined by the Arctic Circle and consists mainly of ice and water, while Antarctica from the Arctic Circle and is the sixth continent.



1958 Commemorative feuillet of the USSR. Edition for the polar station "North Pole".



16 FEB 55 Registered cover mailed from Australian Antarctic base Mawson to Sydney.

C. METEOR AND MEASUREMENTS

α. INSTRUMENTS

Weather Report

At the end of the 19th century and early 20th, networks of meteorological stations collected weather data in their area of competence, with pre-printed postcards (single-leaf). Filled and sent by local correspondents.

East India Service Post Card.

(The address only to be written on this side; the signature and official designation of the sender must be written on the reverse.)

To

The Meteorological Reporter to the
Government of Bengal,
5, Russell Street,
CALCUTTA.

POST OFFICE
CALCUTTA
JULY 1891
QUARTER ANNA

WELLESLEY STREET
DELHI
JULY 1891

1890 Postal stationery toward the Meteorological Office, Calcutta.

For submission of Reports to Meteorological Office only.

FORM C.

DAILY RAINFALL REPORT

Station Mye... District Mye...

Rainfall
for the 24 hours preceding 6 P.M. of 7th day
the 26th of June 1889
is 9.8 inches.

The last Daily Rainfall Report despatched was
for Thurs day the 25th of June of 1891. No rain
fell between that date and the date of the present
report.

Signed. Purno Chandra...

Designation. Asst. Secy.

Despatched at 8th of the 26th June 1889.

This form is to be filled in strictly in accordance
with the instructions issued in Meteorological
Reporter to the Government of Bengal's circular
No. 1 of 1885.

N.B.— All entries of rainfall should be made in decimals
of two places.

M R. O. No. 4.

Daily rainfall report. Postcard type (C) fulfilled.

Königreich Württemberg.

Postkarte

An die Kgl. Württ. Meteorologische Centralstation

in

In Ermangelung eines Dienstsiegels
t. der meteorologische Beobachter

(Unterschrift)

Stuttgart.

POST
KWURTE
FÜNF
PENNIG

1910 Württemberg postal stationery for weather report, mint.

C. METEOR AND MEASUREMENTS

Weather Forecasting

Weather forecasting is the application of science and technology to predict the conditions of the atmosphere for a given location and time. People have attempted to predict the weather informally for millennia and formally since the 19th century. Weather forecasts are made by collecting quantitative data about the current state of the atmosphere at a given place and using meteorology to project how the atmosphere will change.



Looking at the Sky

The condition of the sky is one of the more important parameters used to forecast weather, especially in mountainous areas.



The Analog Technique

The analog technique is a complex way of making a forecast, requiring the forecaster to remember a previous weather event that is expected to be mimicked by an upcoming event.



Telegraph

It was not until the invention of the electric telegraph in 1835 that the modern age of weather forecasting began.



Barometer

Measurements of barometric pressure and the pressure tendency (the change of pressure over time) have been used in forecasting since the late 19th century.



Modern Methods

The basic idea of numerical weather prediction is to sample the state of the fluid at a given time and use the equations of fluid dynamics and thermodynamics to estimate the state of the fluid at some time in the future.

Typical

Scientific American, né le 23 mai 1917 à WEST HARTFORD (Connecticut), décède le 18 avril 2008 à CAMBRIDGE (Massachusetts). Il était météorologue au Massachusetts Institute of Technology. Il découvre en 1963 le Principe de la Théorie du Chaos : une infime variation de paramètre à un moment donné peut énormément faire varier le résultat final. Henri POINCARÉ en avait eu l'intuition, mais les techniques n'étaient alors avancées. C'est à Edward LORENZ que l'on doit la formule de "l'effet papillon" : "Le battiment d'aile d'un papillon au Brésil peut-il provoquer une tornade au Texas ?"

mort de
Edward Lorenz

satellite Tropical Rainfall Measuring Mission

André-Louis Lorenz

Lorenz Edward 'Chaos Theory'

His work on the topic culminated in the publication of his 1963 paper "Deterministic Nonperiodic Flow" in Journal of the Atmospheric Sciences, and with it, the foundation of chaos theory.

In this work he suggested there are certain meteorological systems, we may never be able to predict, not because they are too complex, but because "chaos" is built into their underlying math. Years later, this idea would enter popular culture as "the butterfly effect."

On other words it is impossible to predict the weather for a much period earlier.

Aurora

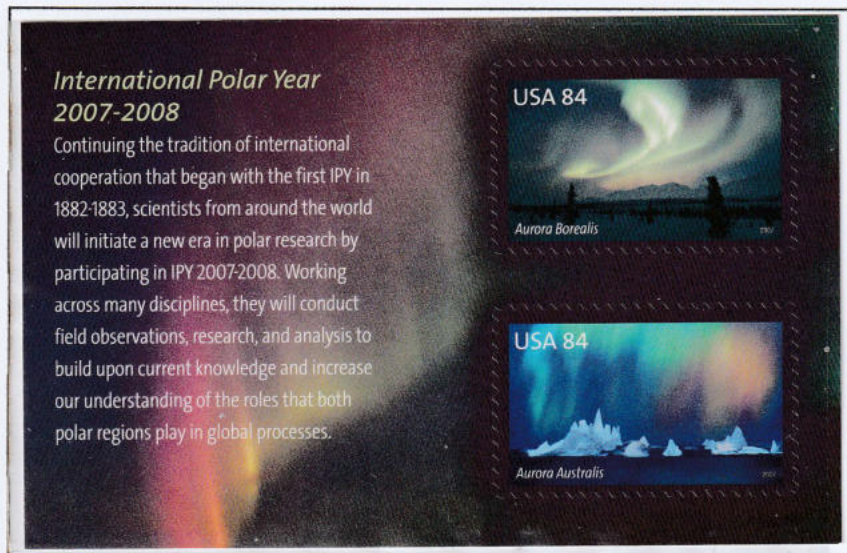
Is a natural light display in the Earth's sky, predominantly seen in the high-latitude regions (around the Arctic and Antarctic). Auroras are produced when the magnetosphere is sufficiently disturbed by the solar wind that the trajectories of charged particles in both solar wind and magnetospheric plasma, mainly in the form of electrons and protons, precipitate them into the upper atmosphere, due to Earth's magnetic field, where their energy is lost.



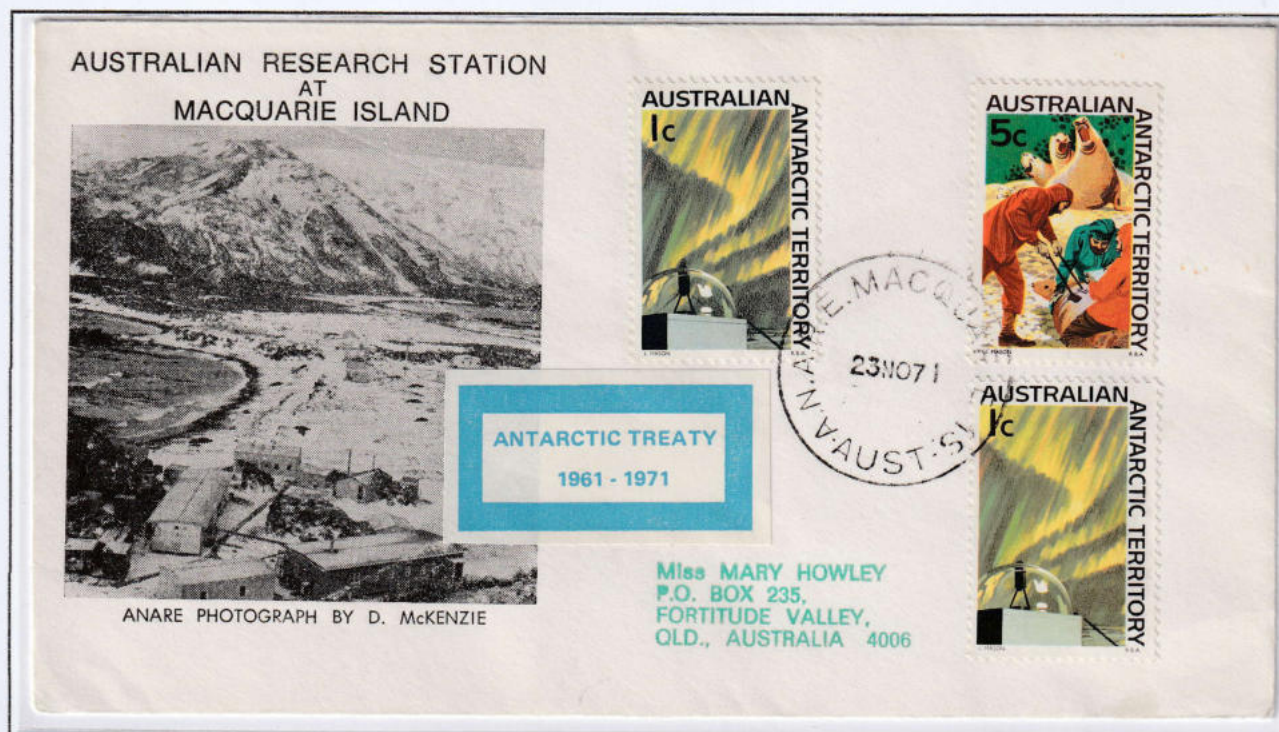
Polar aurora, commemorative issue 1957 for the geophysical year.



Polar Aurora Australis



An aurora sometimes referred to as polar lights, northern lights (Aurora Borealis) or southern lights (Aurora Australis)



Australian Antarctic Territory, folder with a 10-year commemorative label for the International Antarctic Agreement 1961-1971 and AAT stamps depicting the Southern aurora (Aurora Australis). Sent from Macquarie Island to Australia.

C. METEOR AND MEASUREMENTS

b. PHENOMENA

Clouds

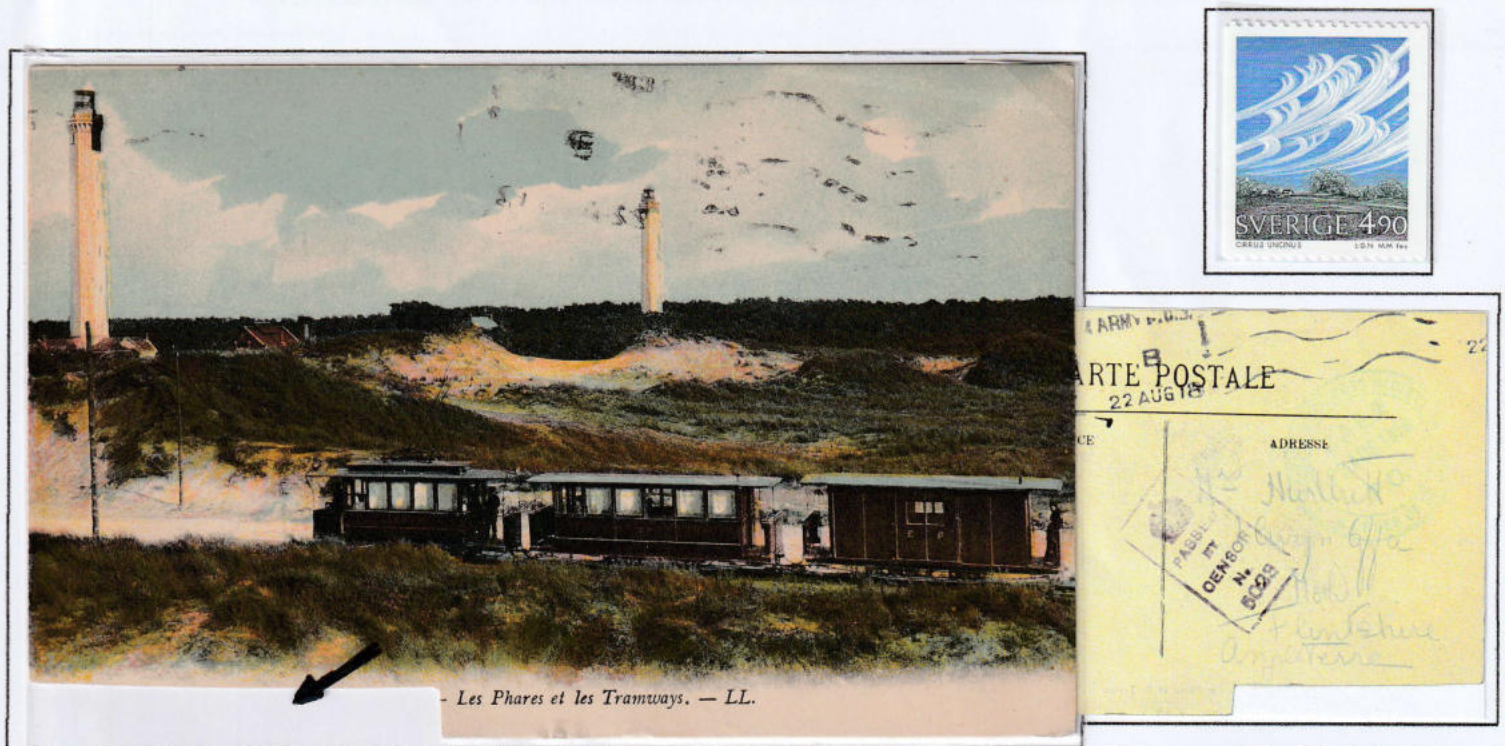
Is an aerosol consisting of a visible mass of minute liquid droplets, frozen crystals, or other particles suspended in the atmosphere of a planetary body. Water or various other chemicals may compose the droplets and crystals.



1984 USSR postal stationery 4k with commemorative postal stamp for the 9th International Conference on Physics of clouds, in Tallinn, Estonia.

Cloud Cirrus

Is a genus of atmospheric cloud generally characterized by thin, wispy strands, giving the type its name from the Latin word cirrus, this cloud can form at any altitude between 5.0 km and 14 km above sea level.



Photocopy 60% of the back side

Post card used as a military stationery, mailed censored (cut the name of place of dispatch by censorship.).

C. METEOR AND MEASUREMENTS

b. PHENOMENA

Cloud Cumulus

Cumulus clouds are low-level clouds, generally less than 2,000 m in altitude unless they are the more vertical cumulus congestus form. Cumulus clouds may appear by themselves, in lines, or in clusters.



Cloud cumulus



Altocumulus, is a middle-altitude cloud genus, characterized by globular masses or rolls in layers or patches, the individual elements being larger and darker than those of cirrocumulus and smaller than those of stratocumulus.



Mammatus (or mammatocumulus), meaning "mammary cloud", is a cellular pattern of pouches hanging underneath the base of a cloud, typically cumulonimbus rain clouds, although they may be attached to other classes of parent clouds.

Cloud Stratus

Are low-level clouds characterized by horizontal layering with a uniform base, as opposed to convective or cumuliform clouds that are formed by rising thermals. Stratus clouds may produce a light drizzle or a small amount of snow.



Cloud stratocumulus and cumulonimbus



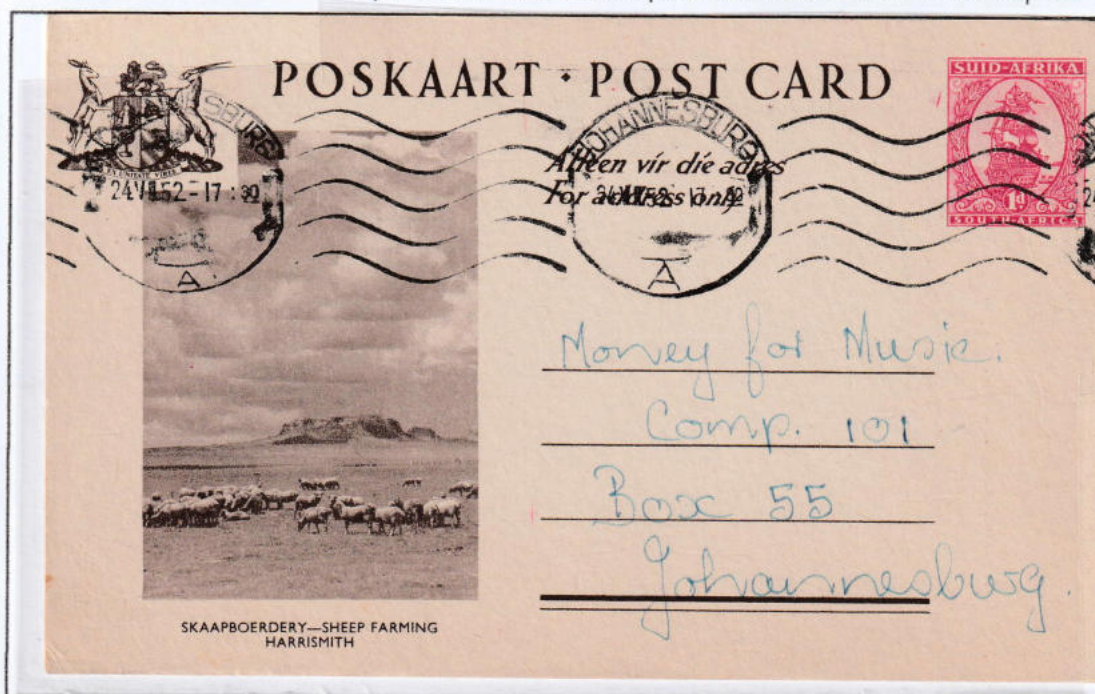
Polar stratus in Antarctica



Cloud stratus Asperitas

Cloud Nimbus

Formed when the air cools and results in condensation (a process where the water vapor turns into liquid) of water vapor that is invisible and produces visible cloud or ice droplets.



Sky, cloudy nimbus

1952 South African stationery 1d posted from Johannesburg.



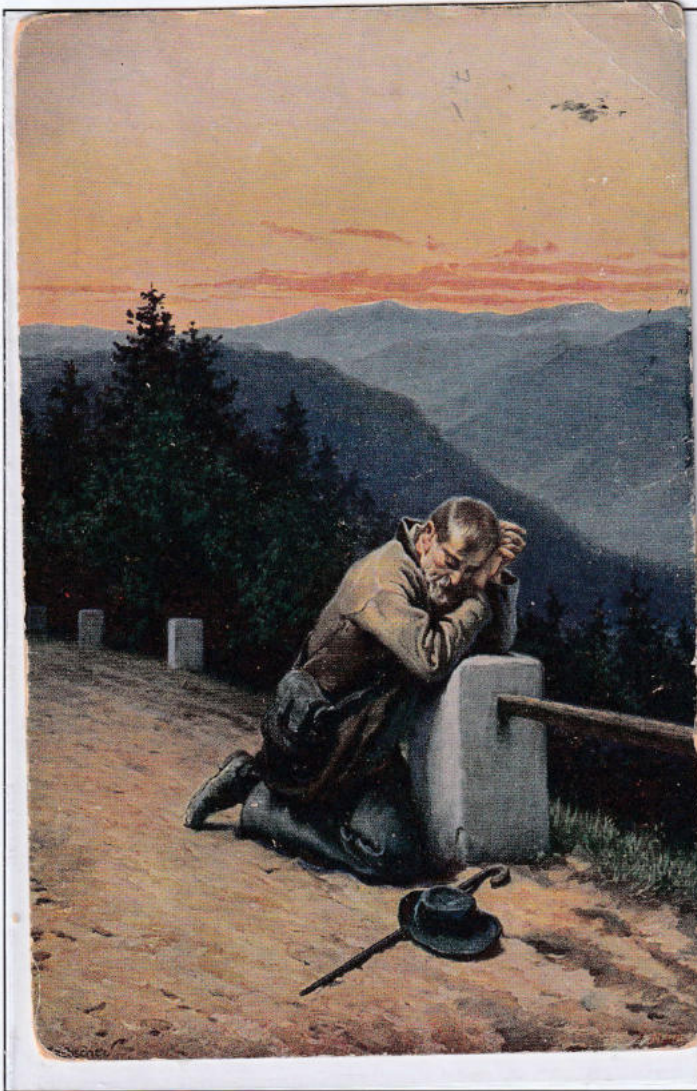
Cloud cumulonimbus

C. METEOR AND MEASUREMENTS

b. PHENOMENA

The Color of the Clouds

It is usually the same as the color of the incoming light. Red, pink or orange appear almost exclusively at sunrise or sunset due to the scattering of the rays from the atmosphere.



Red clouds 'cirrus'



Red clouds 'cumulus'



Red clouds in the West.

1917. Postcard used as military stationery k.u.k. Censorship. WWI.

Special Clouds

Additional to the known clouds, there are several other by special composition, but they are found in nature



Chemical cloud. It is usually due to a factory accident, war activity, or experimentation



Nuclear fog comes from a nuclear explosion. In the first seconds there is a bright (fiery) sphere that is the air of the explosion area that has received tremendous heat and tremendous pressure. Then it gives its place to a cloud mushroom that rises in the atmosphere due to the heat. Originally in the form of a chimney that ends in a balloon shape, giving the image of a mushroom



Volcanic clouds. It consists more of vapors of volatile gases, such as hydrogen sulfide, and water vapor above 100 °C. It is caused by volcanic activity.

C. METEOR AND MEASUREMENTS

Wind

It is moving large masses of air to the surface of the earth. It is caused by the difference in atmospheric pressure between regions of the earth, whereby the air masses move from the highest pressure to the lowest, at a similar rate.



Meteora, in West Greece. The huge rock pillars were the formed by weathering by water, wind, and extremes of temperature on the vertical faults.

1901 Stationery 10lepta, posted 19 Aug 1919 to Paris

b. PHENOMENA



Seed conveyor.



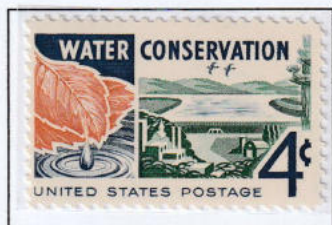
Summer sports by the assistance of wind



1966 French postal cheque envelope, advertising windproof material.

Dew, Frost

Dew is a condensation of the atmospheric water vapor on the surface of the bodies on the earth. When the temperature drops below 0 °C it is perceived as frost. Frost is a natural phenomenon in which water vapor in the atmosphere is concentrated near the soil, directly into microscopic crystals.



Athena, the protector of Attica's land, is also called refreshing because she provides the night dew.

The frozen giant Imir of northern mythology



Dew drops on leaves

Frost on the grass in November (Northern Hemisphere)

Atmospheric Humidity

It is the amount of water vapor in the air. It is another key climatic element. All forms of precipitation, including rainfall, snow, ice crystals and hail, are produced as a result of the condensation of atmospheric humidity

LA CATASTROPHE CONTRE LAQUELLE VOTRE MAISON N'EST PAS ASSURÉE: L'HUMIDITÉ

NUMÉRO VERT
05 42 42 05
SANS COÛT

LE VIRUS DES MAISONS

L'humidité est une des causes majeures du « mal-vivre » : moisissures, mauvaises odeurs, atmosphère saturée, murs dégradés, etc., risques d'atteintes à votre santé : rhumatismes, arthrose, respiration difficile. N'attendez pas pour vous débarrasser de ce fléau et pour profiter à fond d'une maison 100% saine.

► Maintenant l'Européenne d'Humidité traite votre maison dans un temps record et vous garantit les résultats à 100%.

► L'Européenne d'Humidité : 150 spécialistes en Humidologie pour la sauvegarde et la santé de votre maison.

**BÉNÉFICIEZ PENDANT
15 JOURS D'UNE
EXPERTISE GRATUITE**



AGISSEZ MAINTENANT
en renvoyant ce bon à
L'EUROPÉENNE D'HUMIDITÉ

51, RUE AMPÈRE B.P. 108
69685 CHASSIEU CEDEX

Nom :
Adresse :
Tél. :

STRASBOURG 11/06/90

Air humidity is responsible for many problems in the quality of accommodation.

1990 French postal check envelope advertising the insulation of house from humidity

C. METEOR AND MEASUREMENTS

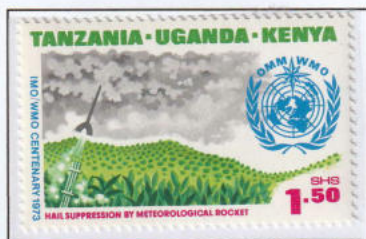
b. PHENOMENA

Fog, Hail

Fog is a cloud formation near the surface of the soil. Hail is a form of submergence, consisting of pieces of ice-shaped beads or other shapes, called hailbows and falling during storms.



Fog in Chinese rice paddy



Fighting hail with a meteorological rocket



Fog in the Georgian (USA) meadows



Fog in Olympus, home of the gods



1965 Congress in Berlin on hail and its effects.



1980. Stationery 4k USSR express, registered airline AR, additional duty 87kop, from Lvov to Erlangen Germany,

C. METEOR AND MEASUREMENTS

b. PHENOMENA

Rain

Under certain conditions, the vapor in the atmosphere is condensed into droplets. When enough droplets form and overcome in a certain size, they fall to the ground and are perceived as rain



Automatic rain gauge 1964 epreuves de luxe



Rain forecast from the barometer



Acid rain



Advertising waterproof with the help of the Saint of the Catholic church St. Medard. 1978 Postal stationery, (Belgian Publibel) 90c



The flood and the ark of Noah



The rain, according to the Inkas

C. METEOR AND MEASUREMENTS

Rainbow

Appears in the sky as a colored tape, usually after the rain. It is formed by the analysis of sunlight when it falls on water droplets at a certain angle.



1981, Italy postal stationery, 150 L. An edition by the opportunity of philatelic exhibition in Bari

b. PHENOMENA



After the storm in the city



Rainbow after the flood of Noah



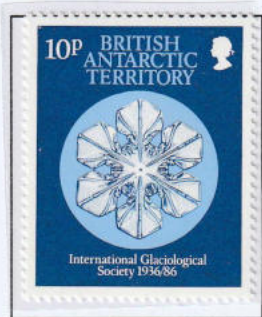
Show rainbow is an indication that the storm passed. It is time for agricultural work.
1922, Registered cover from Krakow to Wien.

C. METEOR AND MEASUREMENTS

b. PHENOMENA

Snow

Snowflakes are formed when cold water vapor changes into ice crystals that each has a perfect hexagonal shape, and they are all different from each other. The flakes consist of agglomerates of such crystals.



Snow crystals. None in nature has the same shape



Snow game



1966, Meter, snow chains for truck from Bavaria factory



1958, Sports in the Snow, Skiing.

Russian stationery 40k with additional registered fees 65k

C. METEOR AND MEASUREMENTS

b. PHENOMENA

Thunderbolt

The thunderbolt is a powerful electric spark that breaks out between clouds, clouds and ground. Benjamin Franklin demonstrated in the known experiment in 1752 that thunderbolt is electricity. Symbolizes power and speed.



Lightning rod, lightning protection advertisement.
Postal stationery publibel 2.5 F



The thunderous god Thor brings the storm



Prokop Diviš, (1698 – 1765) was Czech, theologian and natural scientist. To prevent thunderstorms from occurring, he inadvertently constructed one of the first grounded lightning rods.



2002 Postal stationery - China 60c lottery, thunderbolt in a storm

Typhoon

A typhoon is a mature tropical cyclone that develops between 180° and 100°E in the Northern Hemisphere. This region is referred to as the Northwestern Pacific Basin, and is the most active tropical cyclone basin on Earth



Greek mythology. The battle among Zeus and Tyfweos (Typhon) twisted feet symbolize the cyclical winds of hurricane.



The image of Hurricane Gilbert, view from satellite.



Hurricane awarenes.



Additional fee 50c for victims of the cyclone.

Storm

Strong weather phenomenon accompanied by rain and strong wA storm is any disturbed state of an environment It may be marked by significant disruptions to normal conditions such as strong wind, tornadoes, hail, thunder and lightning (a thunderstorm), heavy precipitation (snowstorm, rainstorm). It is usually short-lived.



Storm system by satellite



Storm in Toledo, table by Theotokopoulos



Storm on the beach of Cocos



Disaster after storm
1931 Swiss postal stationery 25c

Ozone

The Ozone layer is a region of Earth's stratosphere that absorbs most of the Sun's ultraviolet radiation. It contains high concentrations of ozone (O_3). The ozone layer absorbs 97 to 99 percent of the Sun's medium-frequency ultraviolet light which otherwise would potentially damage exposed life forms near the surface. Ozone depletion and the ozone hole have generated worldwide concern over increased cancer risks and other negative effects.



Commemorative edition for the 10 years of signing the Montreal Protocol for the Protection of the Ozone Layer



1995 Slogan cancellation for the International Symposium of Ozone in Halkidiki Greece



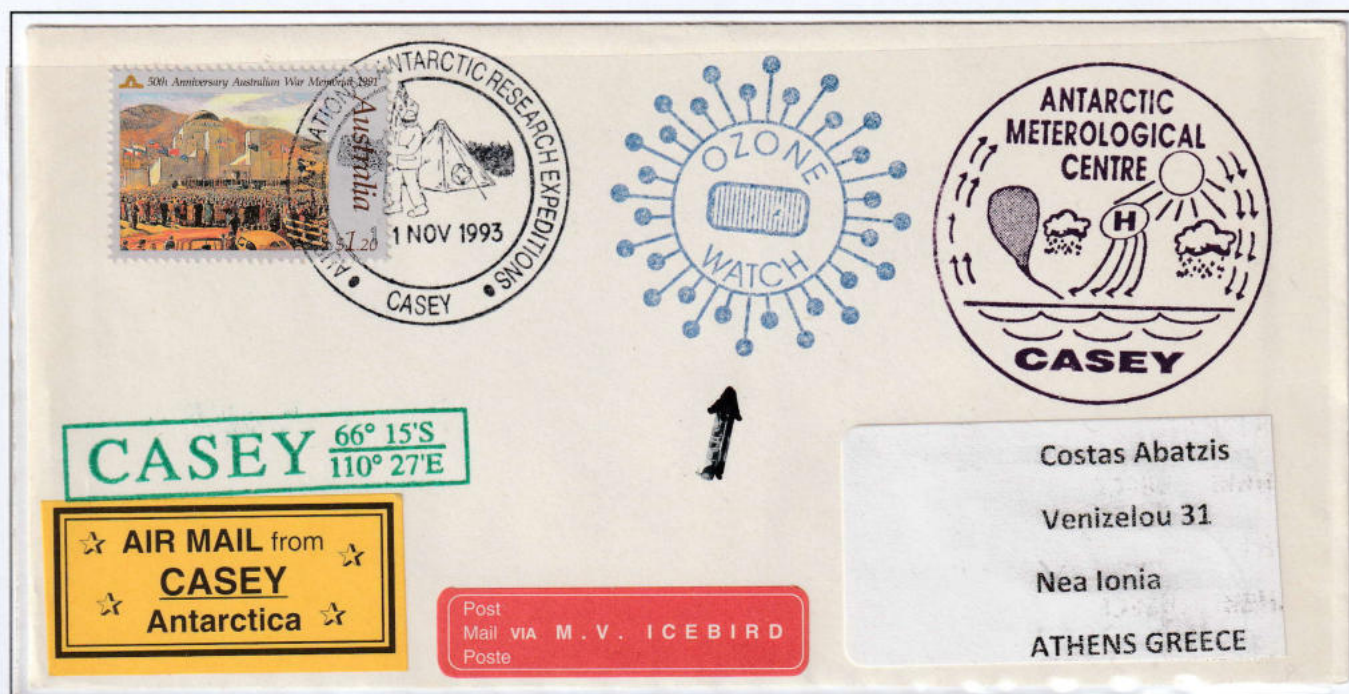
The ozone hole in children's fiction.



The ozone hole (red) over Antarctica.



Ozone measurement with spectrophotometer.



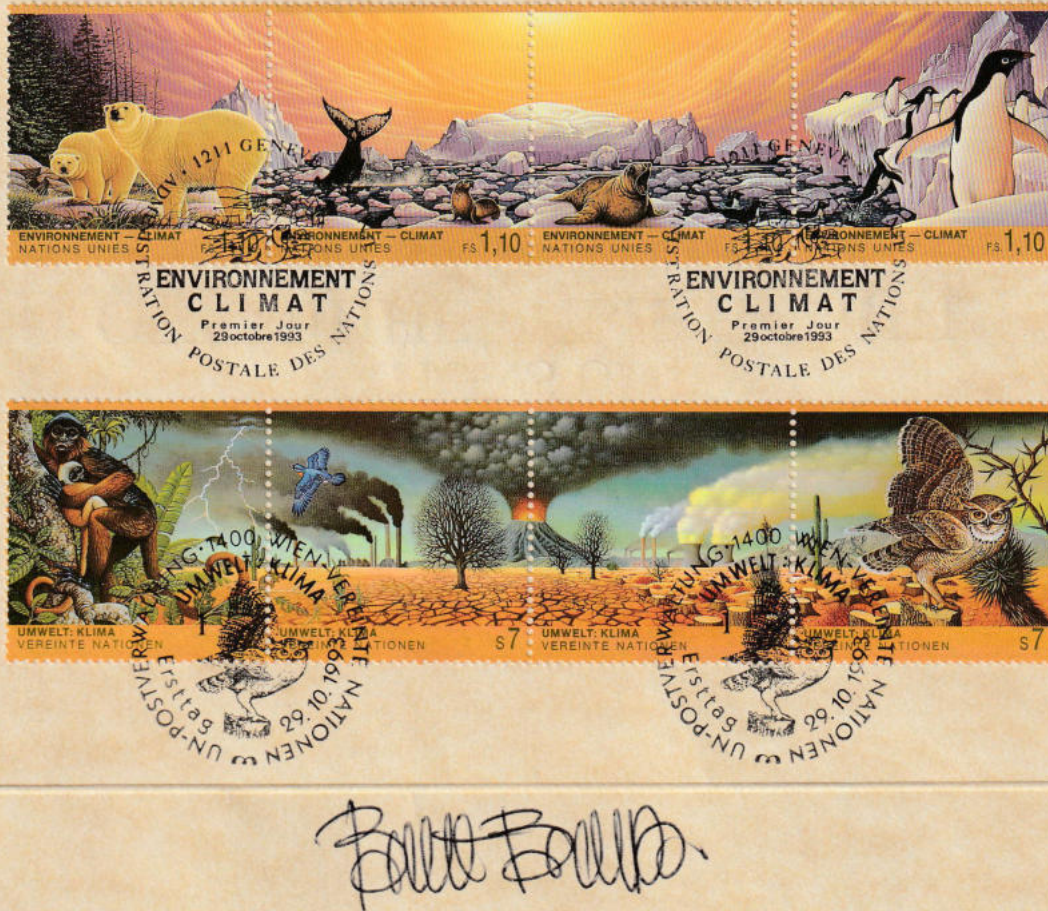
Envelope mailed from the Australian Polar and Meteorological Base, CASEY 11 / Nov / 1993. Commemorative cancellation, (OZONE WATCH). Traveling by boat M.V. ICEBIRD

C. METEOR AND MEASUREMENTS

b. PHENOMENA

Greenhouse effect

Problems have arisen because human activities are turning up the heat by increasing the concentration of carbon dioxide and other "greenhouse gases" in the atmosphere. The excess carbon dioxide is generated by: - The burning of fossil fuels by power stations and industry, -Cars and domestic heating systems, -The felling and burning of trees, -Increased concentrations of methane and nitrous oxide from industrial and agricultural development, - Chlorofluorocarbons (CFCs). The potential climate change impacts of current concern:-Impacts on especially vulnerable populations, (sea level rise, desertification, thawing of the permafrost), resulting in millions of environmental refugees,- Impacts on human health-Impacts on forestry- Impacts on agriculture-Impacts on hydroelectric generation through declining water levels in reservoirs and other inland water systems in some regions,-Impacts on structures, roads and runways built on permafrost in the Arctic and sub-Arctic,



According to UNEP, there is no doubt that some of the most serious impacts would occur if climate warming were sufficient to cause a significant rise in sea level. It is fitting that the United Nations has mandated action on the environmental challenge facing the world today.



UN 1993 Edition on climate protection. Invitation for the presentation of the postal set by the management.
Signed by artist Braldt Braldts. Commemorative postal stamps, for first day of issue.

C. METEOR AND MEASUREMENTS

b. PHENOMENA

Glacier

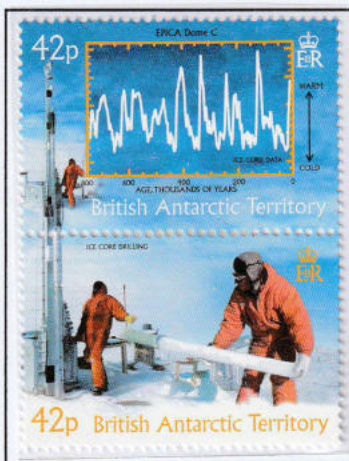
The glacier is a large accumulation of snow. Formed where snowfall abound during the cold months. The glacier moving with the effect of gravitational forces and under the weight of pressure.



Scientific research in glacier



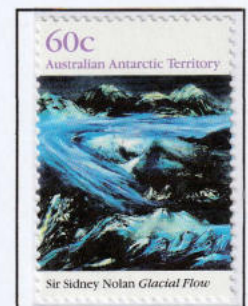
US Glacier in Montana National Park.
27Aug1934.FD postal cancellation



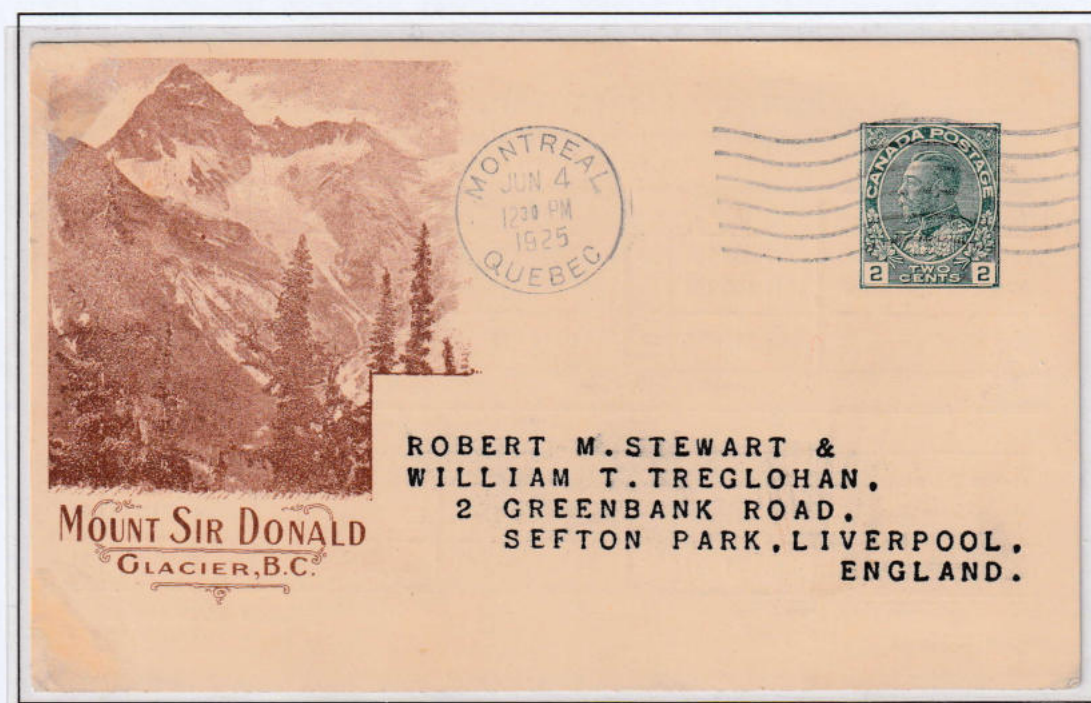
Glacier Core drilling and
environment temperature study



Glaciers in New Zealand



Glacier flow



Glacier on Mount Sir Donald, Quebec. British Colombia
1925 Issue C.P.R. (Canadian Pacific Rail) Stationery Canada 2c

C. METEOR AND MEASUREMENTS

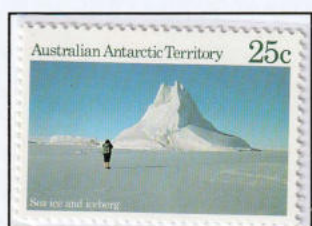
b. PHENOMENA

Iceberg

Iceberg is characterized as ice that is extracted from the glaciers and floats in the sea or formed by very low temperatures in the sea. Cruising on the polar seas opens ice breaks, while merchant ships are at risk of iceberg encounters.



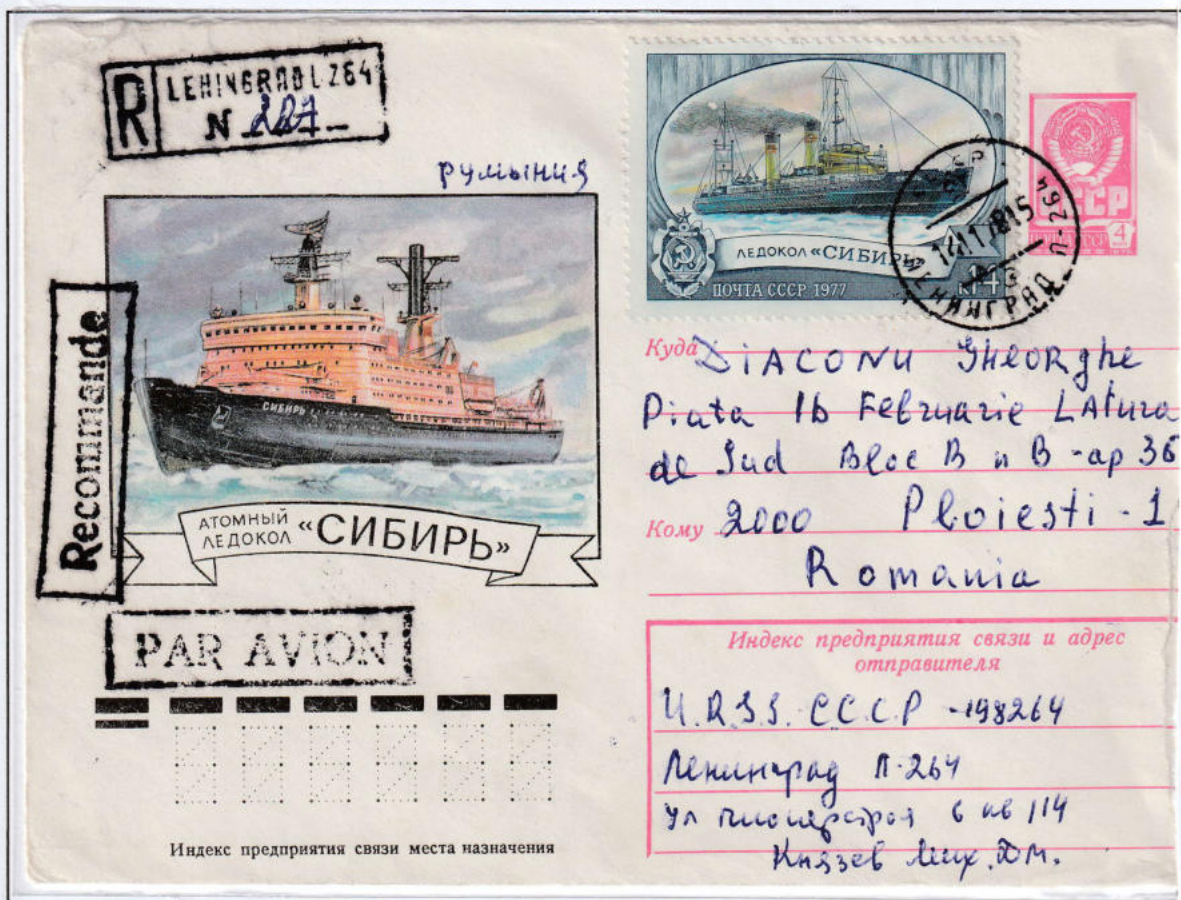
Antarctic, iceberg in front of Solar halo



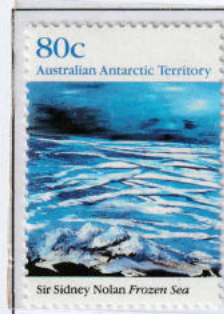
Sea ice and iceberg



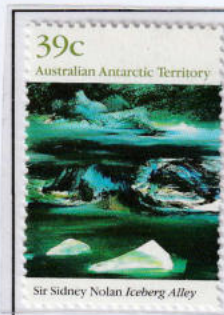
Titanic was a British ocean liner that sank in the North Atlantic on April 15, 1912 after colliding with an iceberg during its maiden voyage from Southampton to New York, causing the deaths of 1,500 people.



The nuclear icebreaker Sibir 173.3 meters long, can develop a speed of 22 knots (in non-icy waters) and has six months cruising autonomy and 75 crew people.



Antarctic frozen sea.



Antarctic. Iceberg Alley

C. METEOR AND MEASUREMENTS

Sea and Air Streams

Sea streams with heat transfer affect the climate of wading areas. Air streams transfer heat and humidity to the places where they pass. Large mountain formations shape the climate of the areas that spread by affecting the flow of gaseous streams.



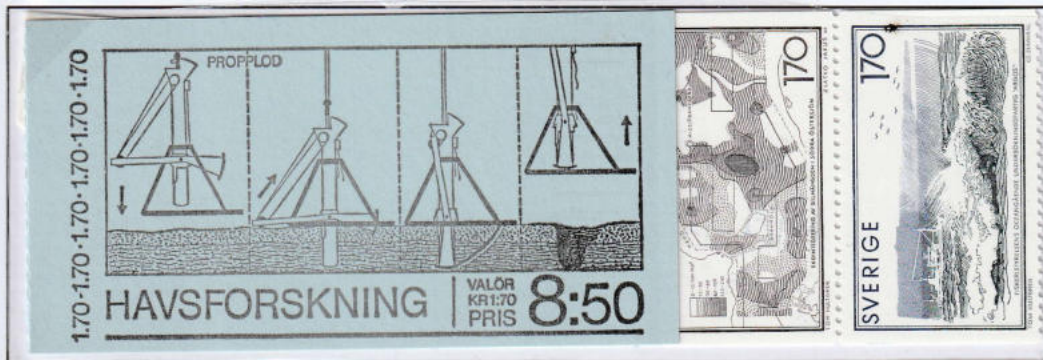
The World Ocean Circulation Experiment (WOCE) was a component of the international World Climate Research Program and aimed to establish the role of the World Ocean in the Earth's climate system.



General circulation of the atmosphere



Circulation of air streams in the S. Pacific



Oceanography, sampling at the bottom by a research vessel



Sea streams in the Mediterranean Sea



The German research vessel Polarstern is equipped for meteorological and oceanographic scientific studies on its journeys, which last more than 300 days a year.

Envelope mailed on board, during research mission, from 7/7/95 to 20/9/95. Shipping postal stamp 18/9/95, arrival 25/9/95.

The Sun

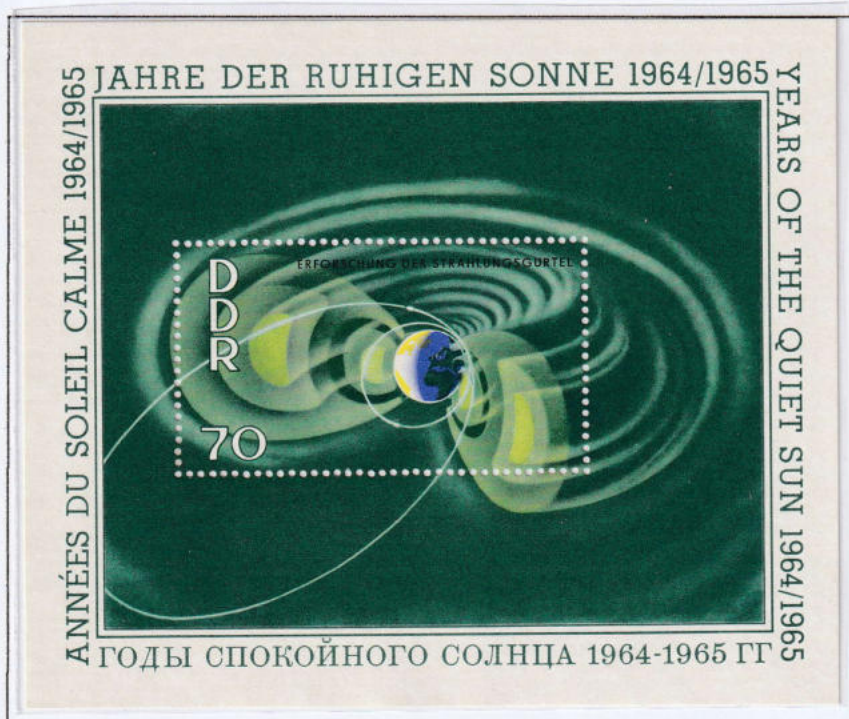
Sun is the heart of our planetary system. It is important in the evolution of life on earth as it causes meteorological phenomena.



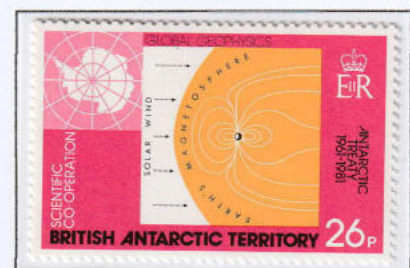
International year of quiet sun, a program during 1964–1965 of studying solar-terrestrial phenomena during a sunspot minima
 Polish FDC for the IYQS1964-65 recommended from Warszawa to USA (total fee 139.50zt)

Solar Activity - Earth's Magnetic Field

The impact of solar activity on earth through the solar wind include, aurora, effect on radio communications, electricity, etc. The magnetic field of the earth diverts the charged particles of the solar wind that would otherwise destroy the ozone of the atmosphere.



The earth and its magnetosphere



Impact of the solar wind on earth's magnetic field



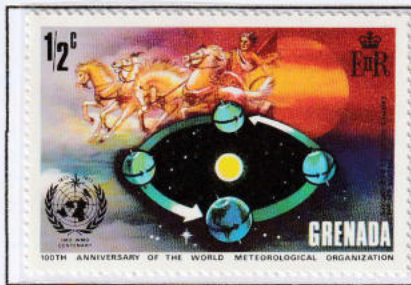
Monitoring the solar wind by satellite

D. PHYSICAL CONDITION OF THE ATMOSPHERE

α. SEASONS

Division of Seasons

The seasons result from the earth's axis of rotation being tilted with respect to its orbital plane by an angle of approximately 23.5 degrees. (This tilt is also known as "obliquity of the ecliptic".)



The four arcs of the earth's orbit between equinoxes and turns, bound the seasons.
The earth's tilt in Romania's stamp se-tenant



Commemorative postal stamp. Appears the angle between the axis of earth and to the plane of its orbit around the sun.

Spring

Spring is season of the year between winter and summer during which temperatures gradually rise. It is generally defined in the Northern Hemisphere as extending from the vernal equinox (day and night equal in length), March 21, to the summer solstice (year's longest day), June 21.



1st May, main symbolism of spring and labor demands.
1971 Soviet postal stationery 4k, with additional fee 12k.

D. PHYSICAL CONDITION OF THE ATMOSPHERE

Spring, Activities and Symbolism



The date of Easter celebrations is determined by the spring Equinox. It is always in the spring, symbolizing the regeneration of nature.

1923 Swedish Easter telegram and photocopy of the backside.

α. SEASONS



Spring on Roman Mosaic



Spring in sculpture



Spring in painting



Swallows, migratory birds. Return in the spring.



Poppies, spring flowers

D. PHYSICAL CONDITION OF THE ATMOSPHERE

α. SEASONS

Summer

Summer is the hottest of the four temperate seasons, falling after spring and before autumn. At the summer solstice, the days are longest, and the nights are shortest, with day-length decreasing as the season progresses after the solstice.



1969 Mediterranean Club advertises summer activities in Mediterranean Sea.



Cereal crops, agricultural summer work

1920 Semi-official postal stationery. Swiss, 7.5c with additional fee 3c, posted from Burgdorf Switzerland to England.

D. PHYSICAL CONDITION OF THE ATMOSPHERE

α. SEASONS

Autumn

Also known as fall, is one of the four temperate seasons. Autumn marks the transition from summer to winter, in September (Northern Hemisphere) or March (Southern Hemisphere), when the duration of daylight becomes noticeably shorter and the temperature cools down considerably.



TV show banner, for launch in September 2004
Indian postal stationery Meghdoot 25r



School starts in the autumn



Autumn in forest



Agricultural work on tillage and planting of the soil, begins by autumn. Meter with advertising slogan for plowing "THE SKALISTIC DEVELOPMENT DIVERSES PRODUCTION". Envelope by a fertilizer company.

D. PHYSICAL CONDITION OF THE ATMOSPHERE

α. SEASONS

Winter

Winter is one of the four seasons and the coldest time of the year. The days are shorter, and the nights are longer. Winter comes after autumn and before spring. Begins at the winter solstice, in the Northern Hemisphere, which is usually December 21.



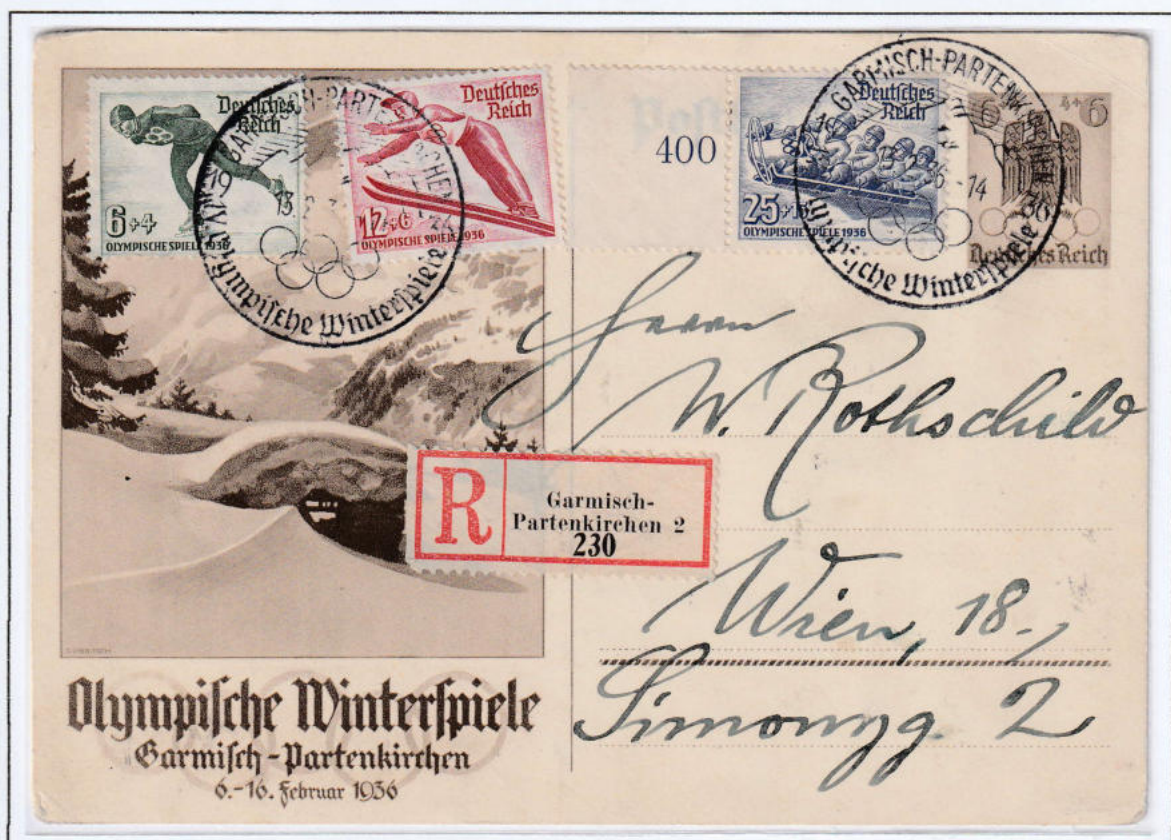
Deciduous plants
in the winter



Children's winter
amusement

In the 17th century, Isaac Newton argued that the date of Christmas was selected to correspond with the winter solstice.

1938 Portugal Christmas Postal Stationery 25 pts



1936 German postal stationery, 6 + 4pf commemorative of IV Winter Olympic Games in Garmisch - Partenkirehen., Additional fee of 48pf by winter sport stamps. From Garmisch to Vienna.

D. PHYSICAL CONDITION OF THE ATMOSPHERE

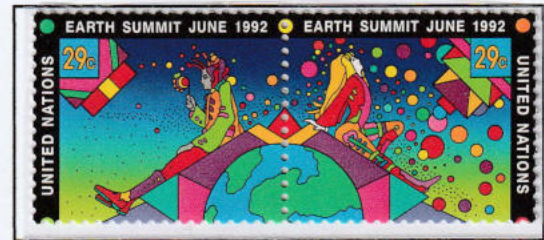
b. CLIMATE

Climate Types

Earth has three main climatic zones - tropical, temperate, polar - that can be further divided into smaller zones, each with its own typical climate. The climate, along with the physical characteristics of an area, defines flora and fauna.



2003 Moscow climate conference.



1992 Rio, climate conference

Northern Polar Zone, Arctic and Tundra

Polar climate is cold and dry, with a long, dark winter. In Tundra (an indented area bordering the Arctic), temperatures rise above zero for only a few months each year. Due to adaptability to the environment many animals are white



Tundra Animals: Taranto, white trumpet, white owl, sea elephant



Commemorative of the conference in Leningrad for the Arctic.
1988 Russian postal stationery 5k, added fee 5k due to registered.

D. PHYSICAL CONDITION OF THE ATMOSPHERE

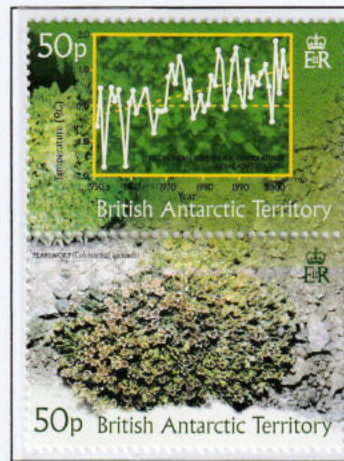
b. CLIMATE

Southern Polar Zone, Antarctica.

It is the coldest continent of the Earth. Temperatures reach a minimum of -80°C to -90°C inside the continent in the winter and a maximum of between 5°C and 15°C near the coast in the summer. The Antarctic climate does not allow extensive vegetation. The lowest recorded physical temperature was -93.2°C



Antarctic ice shelves



Growth of the plant in relation to air temperature



The flora of the Antarctic belt includes only two flowering plants on the peninsula



Underwater life in the Antarctic.
Antarctic krill.



Moving with a sled.



Antarctica fauna, penguins, seals.



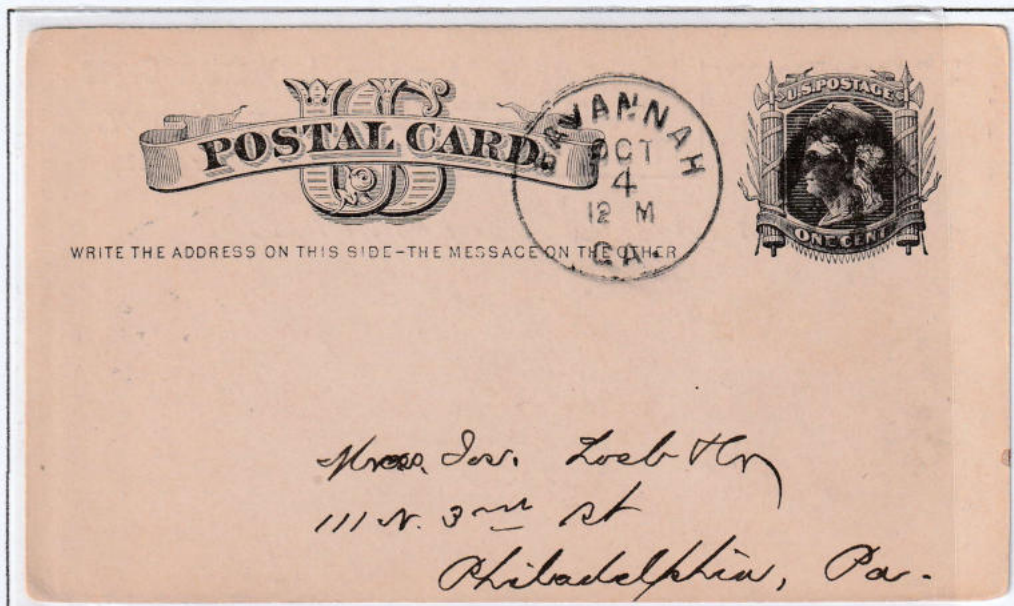
1993, Macquarie Island of Australia, research file for the study of birds.

Postal stamp, commemorative for 60 years of study and wildlife protection on the island, traveled by the polar research vessel M.V. Iceberg

D. PHYSICAL CONDITION OF THE ATMOSPHERE

Meadow (Savannah, Steppe)

Savannah is located between desert and tropical or subtropical forests. The climate is warm all year, but with a distinct wet and dry period. Steppe there is almost in every continent but more in European and Asian Russia. It is characterized by dry soil and herbaceous vegetation due to the very cold winter weather conditions and the very warm and dry conditions in the summer.



1881 USA 1c stationery from the city of Savannah, built on the estuary of the homonymous river. It took this name due to the extensive marshy areas.

b. CLIMATE



Endangered species of Savannah



Степной орел = Eagle of Steppe. Steppe's fauna
1967, Postal stationery USSR 4KB, recommended with additional charges of 6pc.

Work on Steppe

D. PHYSICAL CONDITION OF THE ATMOSPHERE

b. CLIMATE

Temperate Climate

It is in the geographical area between the Tropic of Cancer and the Arctic Circle, as well as between the Tropic of the Capricorn and the Antarctic Circle. It is characterized by warm summers and cold and wet winters with rain or snow all year round. Forests are characterized by deciduous or evergreen trees. In the center of the continents there are grassland, where the temperature changes are large. There are also areas with characteristics such as the wetlands, Mediterranean, mountainous areas, etc.



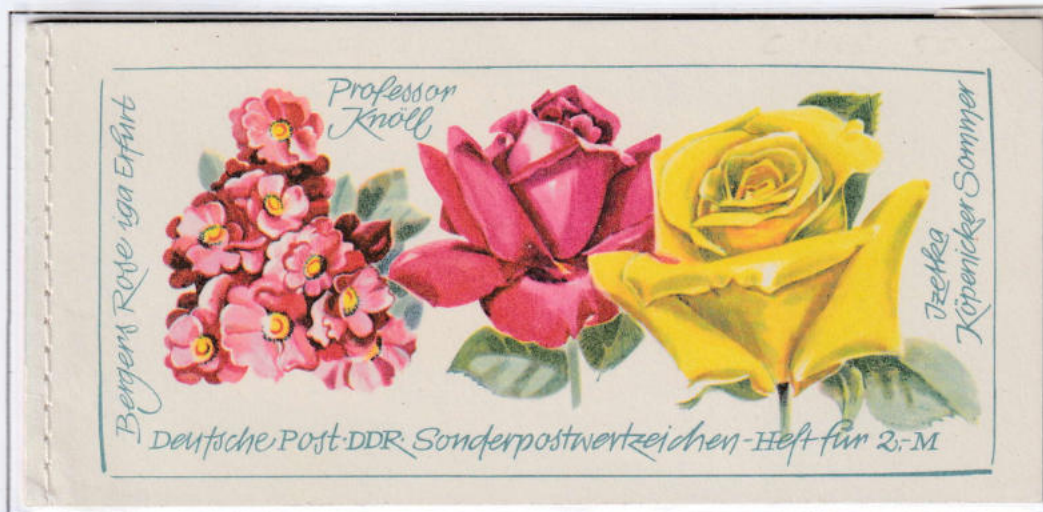
The temperate regions of the planet



Fauna, gray bear



Pine cone trees



Flora, sunflower

1972, DDR Booklet sewn, with flowers usually found in the temperate climate, and advertisements



1979 Cyprus FDC, the Mediterranean fauna and flora (conifers, partridges, perch, mule)

D. PHYSICAL CONDITION OF THE ATMOSPHERE

b. CLIMATE

The Deserts

Areas, dry and waterless throughout the year. They typically receive less than 250 mm of rain per year. Are often found in the center of the continents, away from the sea, with species of flora and fauna. Generally, the deserts are divided into two major categories, the hot and the cold. In hot deserts the temperature reaches 45°C or higher in the summer and drops to 0°C or lower in winter. The cold deserts, known as polar deserts.



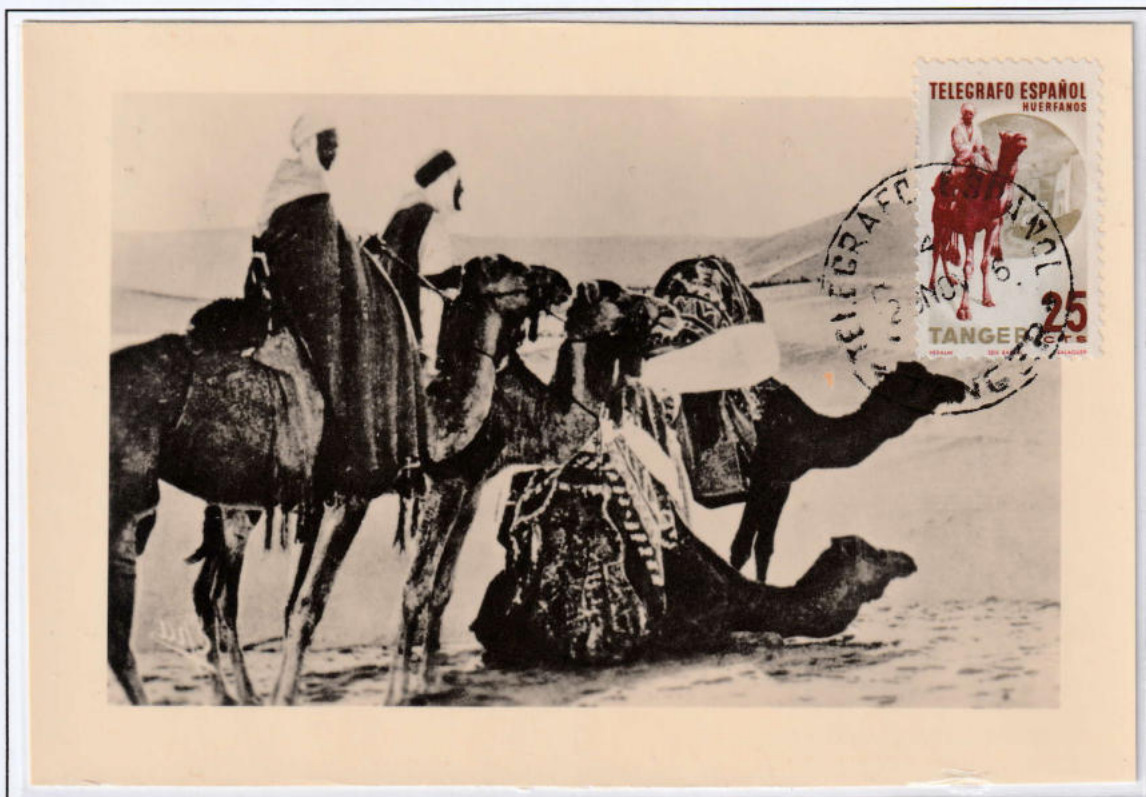
The warm deserts of the earth



Settlement and life in an oasis of the African desert.



Cactus, flora of the American desert.



Camel is the means of transport in the desert, the most asset for the inhabitants.

D. PHYSICAL CONDITION OF THE ATMOSPHERE

b. CLIMATE

Tropical Climate, Tropical Rainforest

They are in regions on either side of the equator. The climate is hot and humid throughout the year, with temperatures remaining around 27-28°C. The minimum normal annual rainfall is between 175 and 200 cm.



1973 Athens International Congress
of Tropical Medicine and Malaria



Monkey, error dual print.



Tropical Climate. Fauna



Rainforest. Flora and Fauna



Map of regions that develop tropical diseases,
favored by climatic conditions.



Flora in tropical climate,
fruit.



1947 East Africa. Collection of coconut fruit
Finished lab, color test, engraver Pierre Gandon

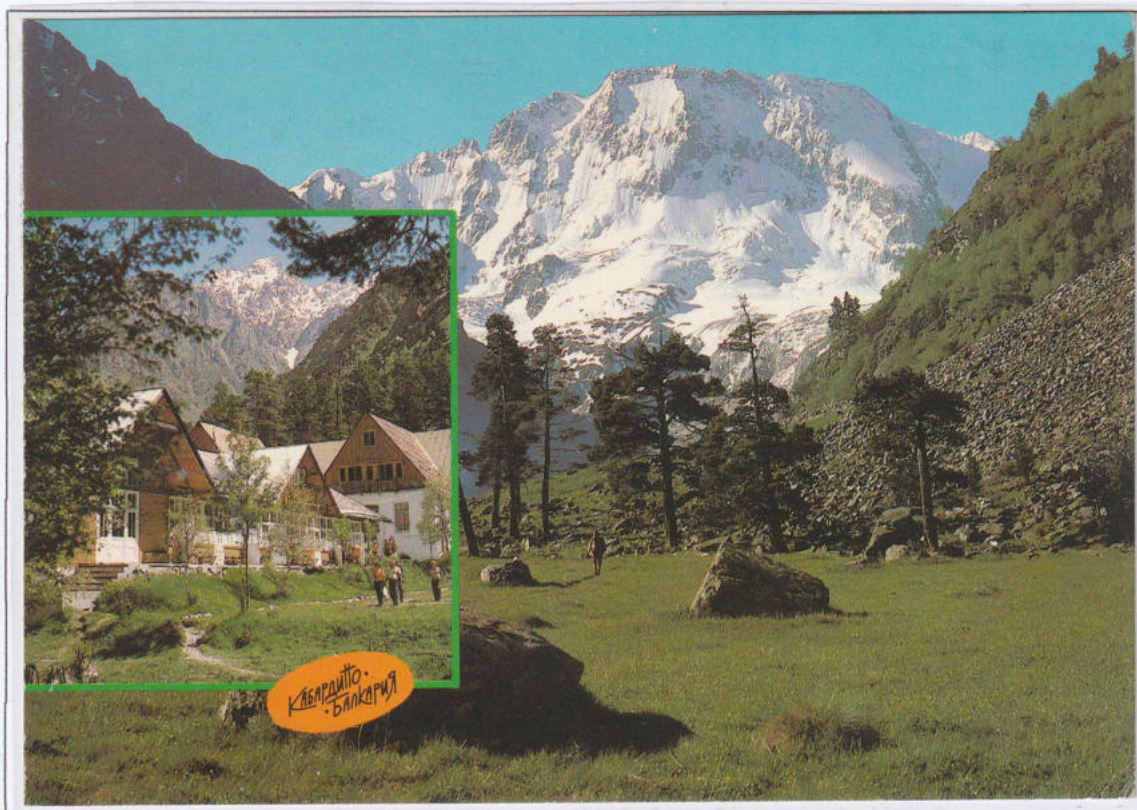
D. PHYSICAL CONDITION OF THE ATMOSPHERE

b. CLIMATE

Mountain Climate

The temperature of the atmosphere decreases as the height increases, so that the high peaks are always covered by snow.

The mountain climate is always cooler than the lower ones.



1987 Russian stationery 4kop

Microclimate

It grows in small areas and differs from that of the surrounding area. For example, the temperature on a high-traffic road or in heavy urban areas where brick, concrete and asphalt, absorb the sun's energy, they heat and re-emit heat into the air.

The difference with the environment can also be 6 ° C.



Bucharest, road of Stavropoleos. Driving thermal vehicles in narrow streets
1960, Romanian postal stationery 30 bani

D. PHYSICAL CONDITION OF THE ATMOSPHERE

b. CLIMATE

Climate Change

Changes in the climate when they are slow are not perceived. However, abrupt changes are responsible for spectacular changes in the fauna and flora of the sites. It is likely that such a change has eliminated cultures or prehistoric beasts.



Climate change means desertification and floods



Sudden climate change may have led the Maya to leave their towns in the 9th century

1960 Mexico stationery 50c.



Prehistoric beasts, have perhaps disappeared due to a volcanic eruption or meteor drop that drastically changed the climate

E. ENVIRONMENT

α. HUMAN INFLUENCE

Environmental Problems

They are called disasters in the earth's biosphere in the natural environment, which are usually attributable to human activity. Environmental issues include environmental pollution, climate change, ozone hole, deforestation, desertification, biodiversity loss, acid rain, etc. The energy crisis and environmental pollution have pushed scientists to shift to exploitation renewable energy sources such as wind, sun, waterfalls. The state, with the aim of protecting individuals or communities from extraordinary natural or man-made disasters has established civil protection.



US development and limitation to energy consumption



10th anniversary of the signing of the Montreal Protocol



10th anniversary of the signing of the Montreal Protocol



Postal mark: Civil protection duty and necessity.



1997 US envelope, postal stationery that motivates to protect the environment.

Air Pollution

It is the addition of substances (pollutants) to the atmosphere, a result of human activity, which would normally not exist. Anthropogenic air pollution is mainly caused by three human activities, industry, transport and households.



Households, the use of solid fuels contaminates the atmosphere.
1958 Belgian postal stationery 40c. Publibel.



Transport contributes to the pollution of the atmosphere

E. ENVIRONMENT

Pollution Imported from Outside Cross-Border

α. HUMAN INFLUENCE

Dust from natural sources (large desert area with little or no vegetation). A phenomenon common in the Mediterranean countries due to their proximity to North Africa.



1944 Airgraph post from Mediterranean countries to England



Agricultural Activities

Although agricultural activities take place mostly outside cities, agricultural emissions contribute to fine particulate matter concentration in many cities.



1930 USSR postal stationery, from Moskva to Osek CZR. Added postal fee.

E. ENVIRONMENT

Water Pollution

It is the pollution of bodies of water, such as lakes, rivers, seas, the oceans, as well as groundwater. It occurs when pollutants reach these bodies of water, without treatment. Waste from homes, factories and other buildings get into the water bodies. Water pollution is a problem for the species and ecosystems there. It affects plants and organisms living in the water. In almost all cases the effect is damaging not only to individual species and populations, but also to the wider biological communities.



The pollution of the seas threatens marine life

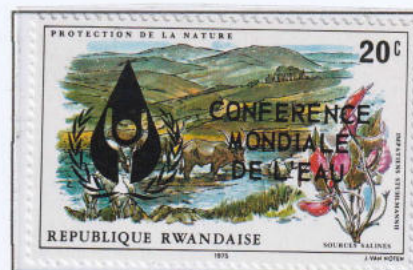


1971 Seashore pollution by chemicals. Seabirds before and after infection with petroleum products.

α. HUMAN INFLUENCE



Environmental protection, clean atmosphere clean oceans



World conference for water



UN, issue for clean oceans.

E. ENVIRONMENT

Industrial Development

Industrial processes can have negative environmental impacts, causing climate change, loss of natural resources, air and water pollution and extinction of species. These threaten the global environment as well as economic and social welfare.



The emission of industrial gases, SO, H2SO4, HNO3 creates acid rain that destroys flora.



1964, Strasbourg, commemorative postal stamp for the European conference for contamination of the atmosphere.



1. POSTWERTZEICHENSCHAU
13.—16. JUNI 1942
LITZMANNSTADT



Monuments are at risk due to air pollution



1942, LITZMANNSTADT Polish industrial city. Gas emissions from chimneys Germany postal Stationery 5pf. Copy of back side by 60%.

Waste in the Environment

The increasing volume and complexity of waste associated with the modern economy is posing a serious risk to ecosystems and human health. Every year, an estimated 11.2 billion tons of solid waste is collected worldwide and decay of the organic proportion of solid waste is contributing about 5% of global greenhouse gas emissions.

प्लास्टिक प्रदूषित करते हैं



क्या आप ऐसा जीवन चाहेंगे
प्लास्टिक का निष्पादन
सावधानीपूर्वक करें



जहाँ है हरियाली । पर्यावरण और वन मंत्रालय
वहाँ है खुशहाली । भारत सरकार

IPPLJ2005

मेघदूत पोस्ट कार्ड
MEGHDoot POST CARD



प्र.मु./SPP/HYD-2005

पिन PIN

(इस लाइन के नीचे न तो लिखें और न ही मुद्रित करें Do not write or print below this line)



Raising awareness
of the public



Separation of household
waste for recovery

River full of rubbish while people are living inside.
2005 Postal stationery Meghdoot, India 25r



Promoting the recycling of old metals in the local industry
1958, Romanian postal stationery 30 Bani.

E. ENVIRONMENT

α. HUMAN INFLUENCE

Biodiversity Reduction

Biodiversity is the variety of living organisms of any origin. Today there is a decline in biodiversity on the planet, which is due to several causes such as environmental pollution, forest destruction, desertification, water pollution and increased hunting and fishing.



Desertification of soils
2005 Indian stationery Meghdoot 25a



Destruction of forests



Desertification of the
lake of Arals.



Fishing by industrial fishing fleet.
1938 German postal stationery 6pf.



Hunting wild animals



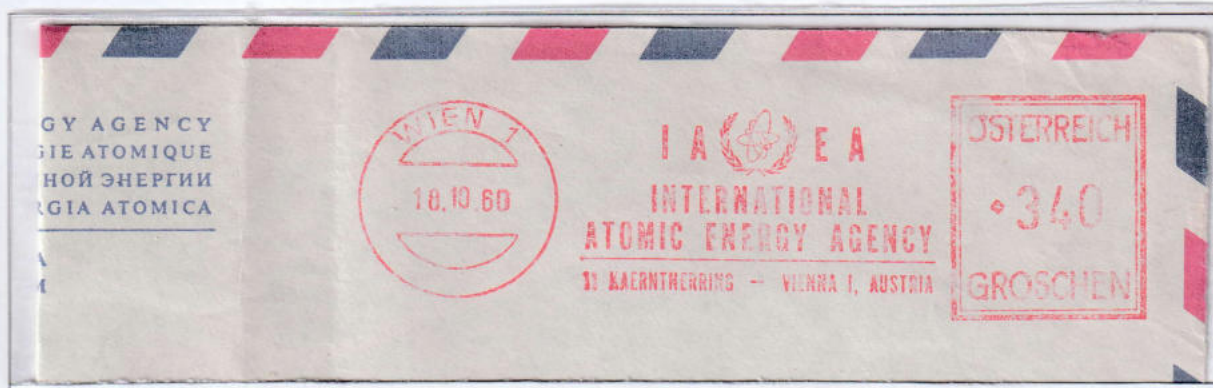
Overfishing

E. ENVIRONMENT

α. HUMAN INFLUENCE

Nuclear Energy - Leakage

Nuclear meteorology investigates the distribution of radioactive aerosols and gases in the atmosphere and has a long history: Advantage of nuclear power is that it does not increase the amount of greenhouse gas contributing to the greenhouse effect. A disadvantage is the leakage of radioactivity that can be caused by an accident such as in Chernobyl and Fukushima.

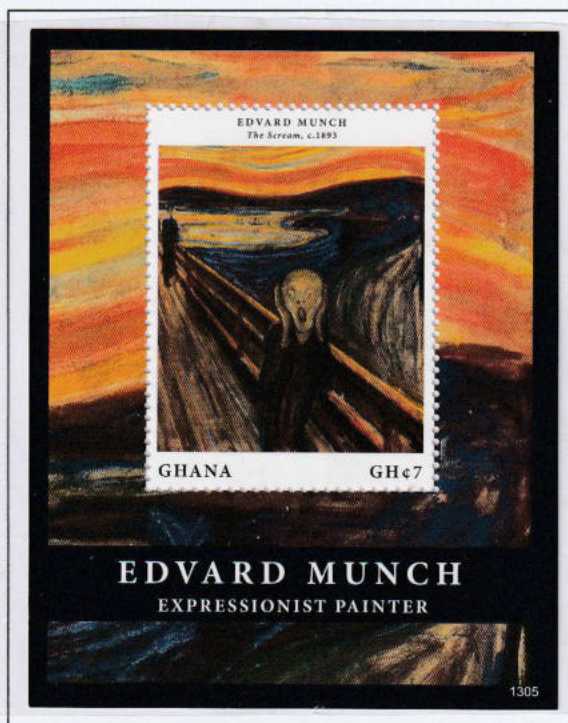


Cover of International Atomic Energy Agency (IAEA). It is an international organization that seeks to promote the peaceful use of nuclear energy. The IAEA was established as an autonomous organization on 29 July 1957. Has its headquarters in Vienna, Austria. **IAEA Safety Guide**, which is jointly sponsored by the **World Meteorological Organization**, provides recommendations and guidance on how to comply with the safety requirements on assessing hazards associated with meteorological and hydrological phenomena.

Meter of IAEA 10/11/1960



Commemorative issue for the Catastrophe of Chernobyl



U.K. advanced gas cooled reactor

Munch's original name for the work was intended to be "The Scream of Nature, a universal symbol of anxiety. The unnaturally harsh colors of the sky may have been due to nuclear eruption. The facial expression depicted is one of anxiety and fear, in reaction to the sudden change of environment that he has experienced."

E. ENVIRONMENT

Solar Power

Solar energy is radiant light and heat from the Sun that is harnessed using a range of ever-evolving technologies such as solar heating, photovoltaics, solar thermal energy.



The great sun is all-pervasive, shining from the heavens upon land and sea, its rays reaching out to all eternity. Inhuman itself, it is the source of all life. Sun, painting by E. Munch



Exploitation of Solar Energy.



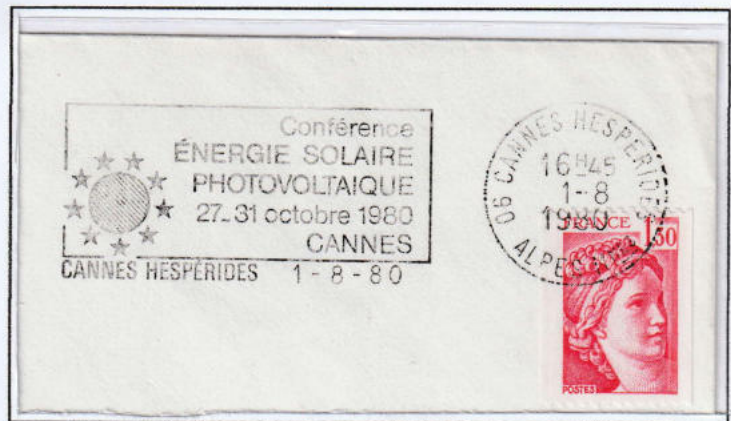
1993 Budapest World Congress on Solar Energy

Photovoltaic Systems,

Photovoltaic systems are one of the applications of renewable energy sources. Taking advantage of the photovoltaic phenomenon, the photovoltaic system produces electricity from solar energy.



Conversion of solar energy into thermal. Solar Water Heater.



1980, Cannes, Commemorative postal stamp of the conference on solar energy and photovoltaic systems.



AEG perfin stamp

AEG is world leader in solar solutions that include a complete range of solar inverters and recognized knowledge of scale equipment.

1960 meter of AEG, advertising high voltage systems.

E. ENVIRONMENT

b. ENERGY PROTECTION

Solar Thermal Systems

These systems use collectors in order to block solar radiation and convert it to heat



Roman war ship



Syracuse coin



According to the myth, Archimedes used solar energy in the Syracuse siege to burn the Romans ships.

Solar collectors transform solar radiation to heat and transfer it to water or special fluid or air

Wind Power

The conversion of the wind energy into a more useful form, compose a renewable source of energy that helps to cut down on the pollution of earth's air.



Exploitation of wind energy by conversion to other forms.



Siemens is the largest designer and manufacturer of wind power systems. The founder of the company

E. ENVIRONMENT

b. ENERGY PROTECTION

Conversion of Wind Energy to Mechanical

Ancient mariners used sails to capture the wind energy. Farmers once used windmills to grind their grains and pump water.

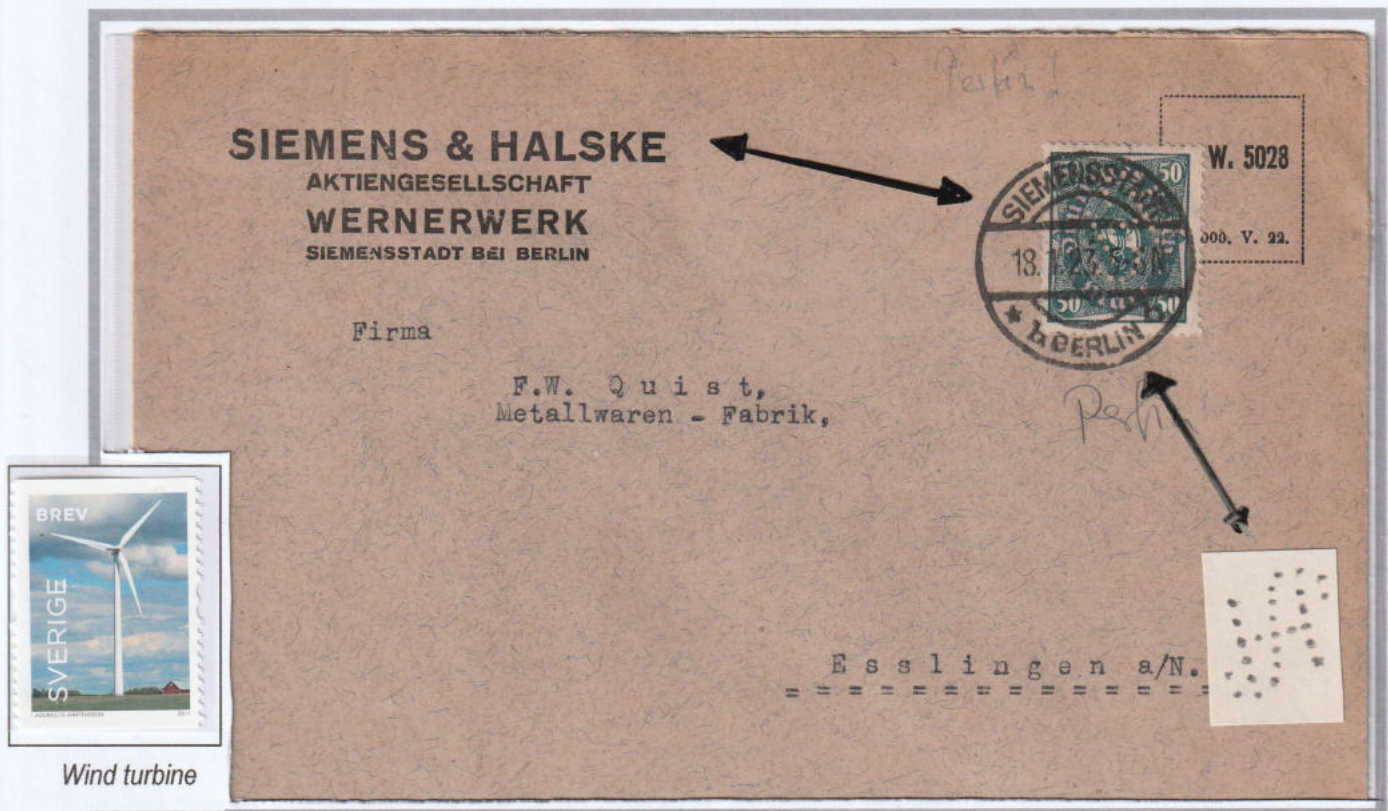


1944 Windmill printed on the gum side. Imperforate pair.

1948 Sailboat frigate. Conversion of wind energy to kinetics.
Reply coupon for use within the British Empire and India

Conversion of Wind Energy to Electrical

Nowadays, the exploitation of wind energy is done almost exclusively with machines that convert wind energy into electricity and are called wind turbines



Wind turbine

Siemens is at the forefront of developing new solar, wind and geothermal projects around the world. Siemens currently holds 7% of the world's wind energy market.

1923 Official cover SIEMENS - HALSKE with perfin stamp, 50mk green/lila post horn issue, Posted from: SIEMENSSTADT-BERLIN post office. The perfin shape is:

SH

E. ENVIRONMENT

Hydropower

In 2015 hydropower generated 16.6% of the world's total electricity and 70% of all renewable electricity. Since water is about 800 times denser than air, even a slow flowing stream of water, or moderate sea swell, can yield considerable amounts of energy. There are many forms of water energy:



The water energy conversion to electrical, schematically.



Wave energy can be transformed into electrical.



Tidal energy is a form of hydro power that converts the energy obtained from tides into useful forms of power. The Moon plays the biggest role in tidal.



Water flow (kinetic energy to electricity)



1958 Dam in Romania, postal stationery, 55bani, registered, air, additional fee 10 bani + 3leu

E. ENVIRONMENT

Geothermal Energy

Is thermal energy generated and stored in the Earth. The geothermal energy of the Earth's crust originates from the original formation of the planet and from radioactive decay of materials. The geothermal gradient, which is the difference in temperature between the core of the planet and its surface, drives a continuous conduction of thermal energy in the form of heat from the core to the surface. It comes in either vapor-dominated or liquid-dominated forms.



Hydrothermal phenomena



Collection and conversion of geothermal energy into electricity



International Conference on Geothermal energy and Volcanism



Volcanic action



Magma path, energy transfer



Geothermal baths



Charles IV, the Roman Emperor, during a campaign, founded the city of Karlovy Vary in the place where he discovered hot spas. Renamed as Karlsbad (= Charles bath) in honor of the Emperor.

Postal stationery 23/1/1931 from Karlsbad to Munich 5 Heller

E. ENVIRONMENT

C. EFFECT ON EVERYDAY LIFE

Weather and Agricultural

Weather plays a major role in determining the success of agricultural pursuits. Most field crops are dependent solely upon weather to provide life-sustaining water and energy. Livestock are also dependent upon weather for their comfort and food supplies. Occasionally, adverse weather conditions can cause production losses,



Influence of weather (rain and wind) on arable land



Meteorology and Crops



Meteorology and Water Supply



Weather and Livestock



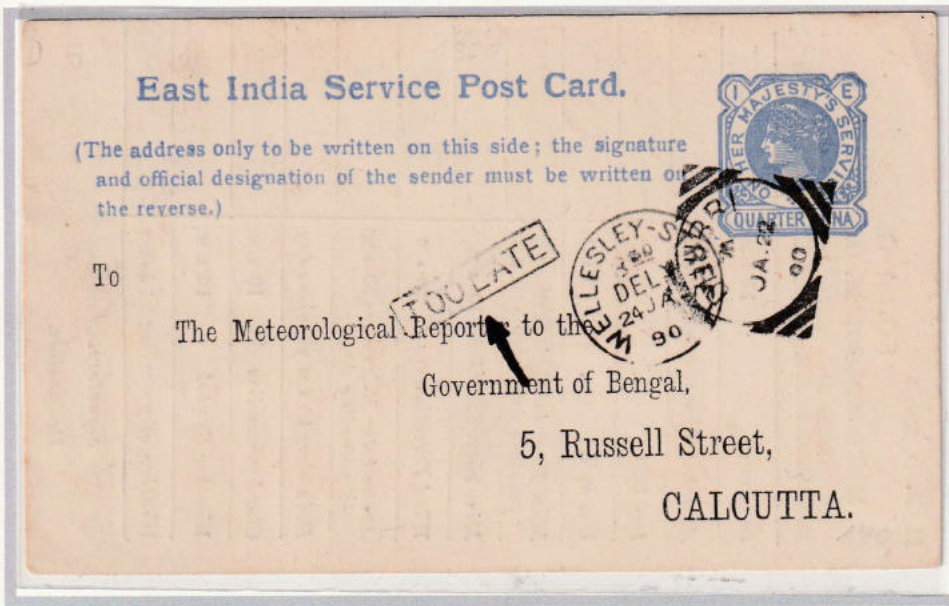
1968 Commemorative post stamp "Meteology and Agriculture"

E. ENVIRONMENT

c. EFFECT ON EVERYDAY LIFE

Weather and Mail

Postal services are adapted to operate in all weather conditions. They helped in the movement of meteorological information material, particularly in the second half of the 19th and the first half of the 20th century.



M. R. O. No. 8. FORM G. DHUBRI	
METEOROLOGICAL OBSERVATION	
Date taken at	27th Jan 1890
Barometer	29.959 8 A.M. 29.948
Attached Thermometer	8 A.M. 64.0
Dry bulb	29.864 8 A.M. 87.0
Wet bulb	29.889 8 A.M. 1.637.191
Max. Ther. during day	8 A.M. 73.874.5
Min. Ther. during day	8 A.M. 54.9
Wind Direction	8 A.M. ENE
Anemometer Miles	8 A.M. 64.78.8
Rain since 8 A.M. previous day.	0-0
Cloud proportion	8 A.M. 0-0
Weather Symbol	8 A.M. 6
Weather of preceding 24 hours.	Wind weather
Signature	A. B. C.
Designation	Observer

Back side Photocopy 60%

Weather report, Stationery. The postmark "TOO LATE" was a method for post offices to explain that the person mailing the letter didn't come to the post office early enough, and consequently, the recipient received the letter later than the postmark would indicate it might have arrived. By this way, the post office was explaining that is not its fault that mail is late.

In front side, it is obvious that the season, in India, is winter (January 1890). It means possibly seasonal strong blowing, dry North East winds, (Winter Monsoon). In order to verify this hypothesis, I examine the manuscript weather report on backside. We read:

Wind direction: ENE (East-North East)

Rain: zero

Cloud proportion: zero (Dry weather)

Anemometer Miles: 64 (It means speed wind 11 Beaufort !)

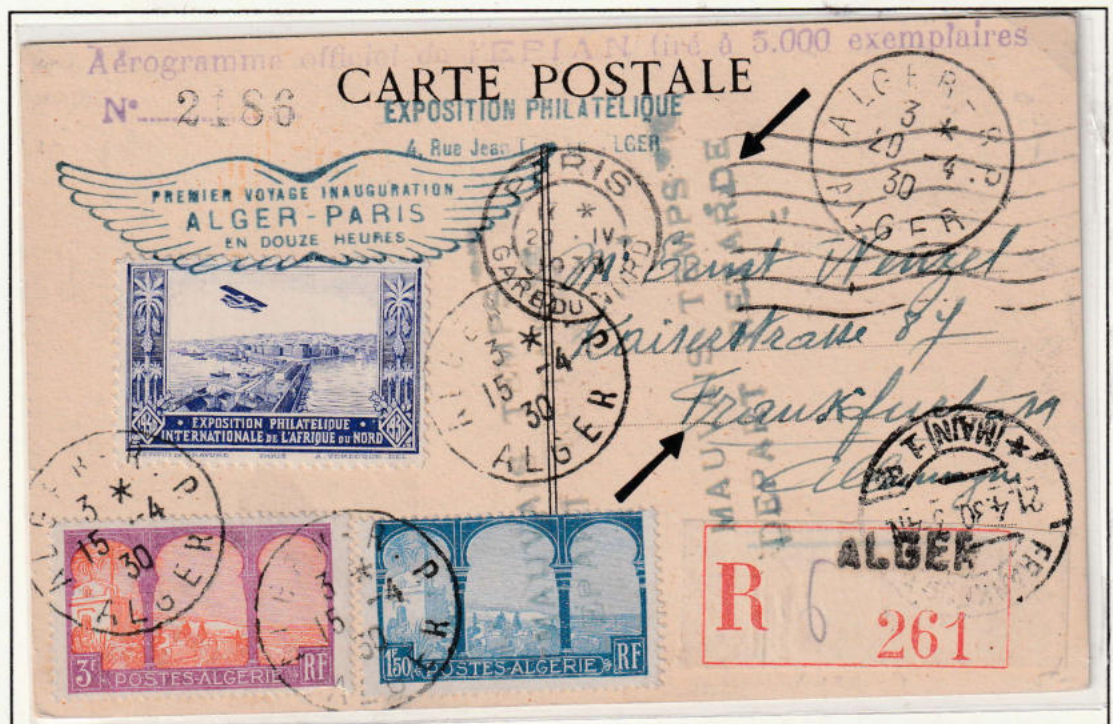
Therefore, the most possible for the postal delay is the stormy winds



Postal coach in the snow.



Postman in rain.



1930 Postcard, Algeria. Inauguration of flight Alger - Paris. Advertisises delivery in twelve hours, (PREMIER VOYAGE INAUGURATION ALGER - PARIS EN DOUZE HEURES). Postal stamp informs for delay, due to bad weather (MAUVAIS TEMPS DEPART RETARDE)

E. ENVIRONMENT

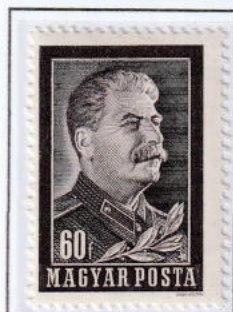
c. EFFECT ON EVERYDAY LIFE

War and Weather

War does not affect weather; weather does affect war. Picked troops, discipline, a well-organized system of transport, proper clothing--in short, all that goes to make up the most efficient military organization, is of supreme importance.

World War II, Eastern Front.

Weather was clearly a critical factor in the campaign to Russia, but in their planning, the Germans completely underestimated the extreme challenges posed by Russia's climate. German meteorological errors and, above all, the Russian infamous — mud season, played a decisive role in the defeat of the Nazi attack on Moscow.



Stalin, leader of USSR

USSR Commemorative
issue for victory

1943 Hitler, the German leader. Stationery 15pf from Vienna to Athens, registered, air, express with additional fees 90 pf. German censorship on the front. Italian on the back

World war II. Western Front.

Perhaps the most important weather forecast ever made was the one for D-day, the Allied invasion of France.



Churchill Allies' Leader of
the West army, Decided the
disembarkation to
Continental Europe named
as D-day 6 Jun. 44

Disembarkation to France
(Normandy)

E. ENVIRONMENT

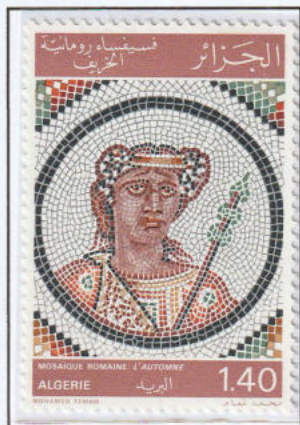
c. EFFECT ON EVERYDAY LIFE

Seasons in Art

It makes sense that something that affects us every day - the weather - would find its way into art both as a subject and as the backdrop in works created by artists over the years. Seasons and meteorological phenomena have been a source of inspiration for artists in all forms of art.



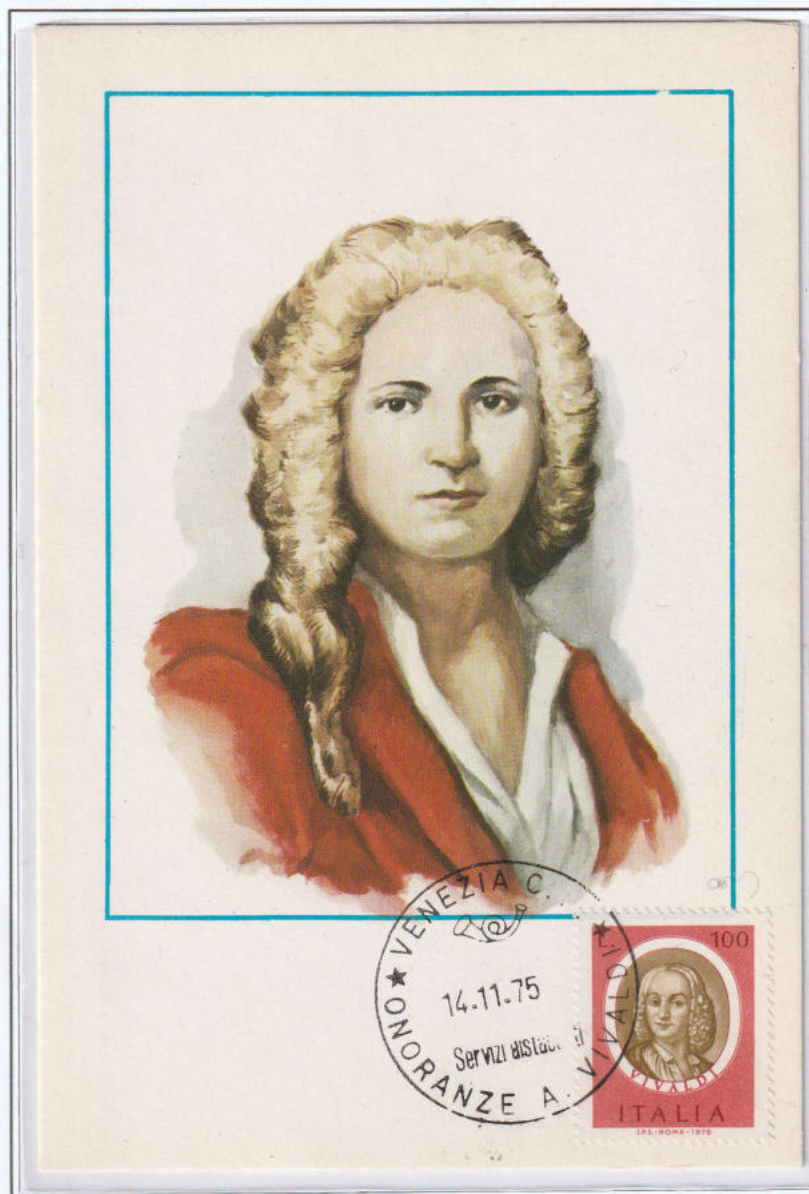
"Minoan Art", Spring.
Fresco from the island of
Thira, Greece.



"Autumn" Roman mosaic,
Algeria.



Dance and Weather,
Laos



Music Concert: 'Four Seasons' by Vivaldi CM FD, Italy.



Painting, "The Spring" by
G. Jacovidis Greece.



Sculpture. Summer and
Autumn, fountain in Paris.

E. ENVIRONMENT

c. EFFECT ON EVERYDAY LIFE

Seasons in Nature

The succession of the seasons affects the lives of animals and plants due to changes in temperature, light, rainfall, winds, etc. In spring and summer, when there is a lot of sunlight and warm days, the plants bloom and then harvest, while animals are born and mated. In autumn and winter, the reduction of sunlight and temperature stops growth. Animals migrate or fall into winter hibernation in cold-protected areas or feed on available food on the ground while plants lose green color and other colors appear, or deciduous leaves fall.



The four seasons in the life of deer alce



The effect of the seasons on the development of lemon tree and chestnut (preobliteres)

E. ENVIRONMENT

c. EFFECT ON EVERYDAY LIFE

Climate and Housing

Man build up his home suitable to face the elements of nature. He looks for the proper orientation and construction materials, to give it the greatest possible benefits from the sunshine or the winds of the area it is located, as well as to protect him from the severe weather conditions.



Homes of Cold Places. The roofs form an acute angle so as not to hold back the snow



Mediterranean and temperate residences. Houses with arched roofs or flat or soft angles, due to limited snowfall. Material usually brick or stone.



House of the steppe and desert. Usually conical shape, with a hole in the center of the roof, for the exit of the smoke coming from the hearthstone. Material, animal skin.



The inhabitants of the Polar Regions live in icehouses, which they call igloo.



Traditional houses of tropical countries usually made by reeds. It is a natural insulator, and air pockets within straw thatch insulate a building in both warm and cold weather. A thatched roof ensures that a building is cool in summer and warm in winter.

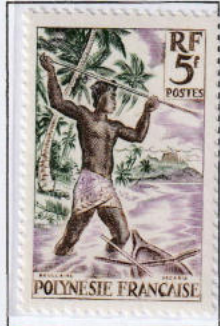
Postal stationery, Belgian Congo 5c.

E. ENVIRONMENT

C. EFFECT ON EVERYDAY LIFE

Climate and Clothing

Clothing is a portable micro-environment of the human body. Clothing is effective tool for the human body to adapt to various climates on the earth from cold to hot. There are many types of clothing suitable to protect against wind, cold, snow, sun, rain.



Clothes of tropical climates. Usually semi-naked appearance



Clothing of temperate climates, proportional to local climatic conditions. Belgium postal stationery.

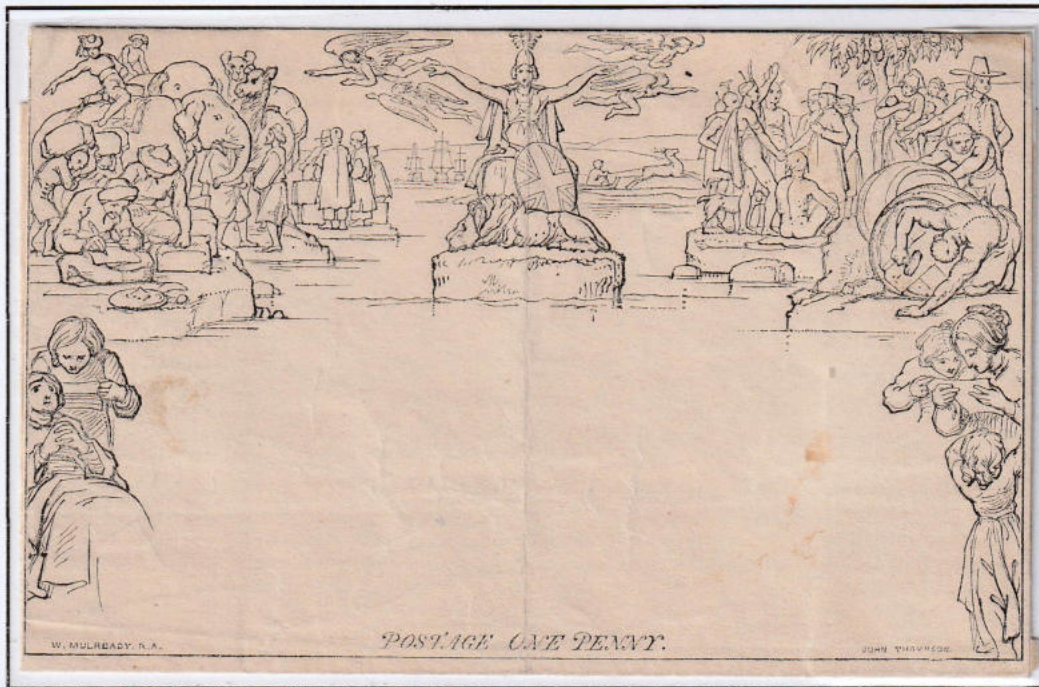


Clothing in arctic territories, heavy clothing, usually fur of wild animals, hunting product. Russia postal stationery 4cop



Epilog

Meteorology has application in many diverse fields such as the military, energy production, transport, agriculture, construction and in most activities in human life.



England, Mulready 1840, type A7, unused, one penny

Human, many millenniums ago, looked from earth to the sky for the weather. Today meteorology "looks" the sky from the earth through satellites.



Artist (P.Bequet) signed die proof, satellite world communication, and the final issued copy.